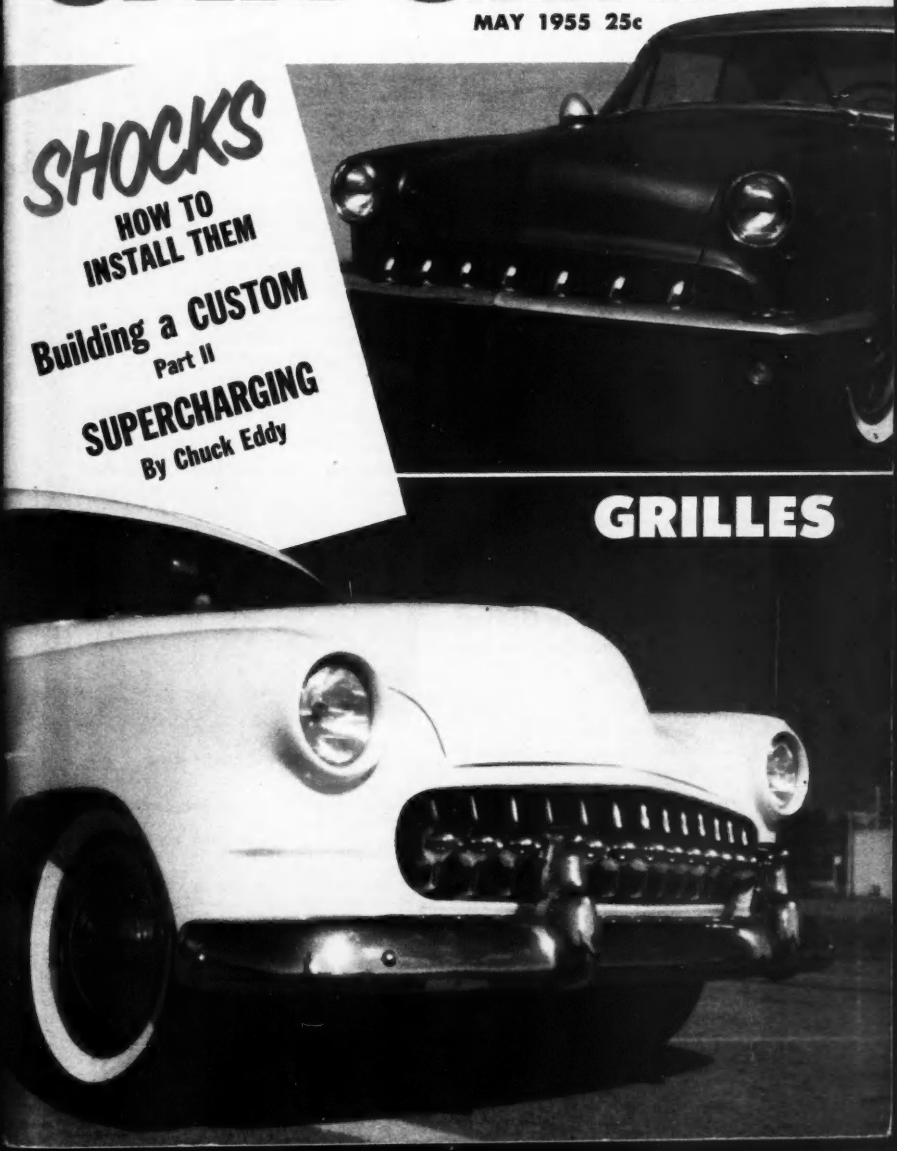
CAR CRAFT

MAY 1955 25c



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CAR CRAFT

Vol. 3 — Published Monthly — No. 1

The Show-How Magazine

CONTENTS

FEATURES

DEPARTMENTS

COVER

The two custom cars featured on this month's cover represent some of the commendable grille restyling that is being turned out every day in backyards and custom shops across the country. For more of the same thing turn to page 54.

Ektachromes by Tom Medley

BENCH RACIN'

with Racer Brown

LAST MONTH, we chirped at some length about stock and modified street engines, the importance of good torque and power outputs and their influence on car performance in the low and middle rpm ranges. This time, we'll carry the discussion a bit further and point out a few ways of obtaining more torque and, consequently, more power in this vital range. I say "vital range" advisedly because, for all practical purposes in a street machine, acceleration is the key factor to performance and, in its simplest form, acceleration is TORQUE.

Torque is directly related to two basic elements of an engine; piston displacement and compression ratio. In a given engine, the maximum torque may be increased by adding cylinders or by enlarging the displacement of existing cylinders and the percentage of torque increase is very nearly in direct proportion to the percentage of displacement increase. In other words, suppose an engine's piston displacement were increased from 240 to 300 cubic inches, or 25%. This would theoretically increase the torque output by 25%, provided the bore/stroke ratio, compression ratio, valve timing, valve, port and carburetor sizes increase in proportion. In practice, two or three percent are usually lost and the engine speed at which maximum torque is developed may shift a bit because it is quite difficult to keep the above items exactly proportional when the bore and stroke of a cylinder are changed. Also, there will be an increase in engine friction per cubic inch with the larger cylinders.

Toward this end, hot rodders have for years advocated boring, stroking and installing large engines in relatively lightweight chassis and the theory behind this practice is very sound: If a few cubic inches are good, more are better and too many are just right.

The above is approximately true of compression ratio as well. To a point, that is. In a given engine with a given fuel (gasoline, in this case), the tendency to detonate is the factor that limits the maximum usable compression ratio and detonation must be avoided like the plague if an engine is to stay together for any length of time. Also, in smaller engines especially, raising the compression to the highest useful value may impose breathing restrictions, but this usually isn't as bad as it's made out. Thanks to better gasolines and combustion chamber designs, the latest overhead valve engines have compression ratios of between 8 and 9 to 1 and it's a good bet that their ratios can be exceeded by about 10% if the combustion chamber deposits are removed at more frequent intervals.

The velocity of gases through the intake system and, to a certain extent, the exhaust system also have an influence on maximum torque output and the engine speed at which maximum torque is developed. Here, the best advice would be to keep valve and port areas, total carburetor venturi area and valve timing at modest figures for best mid-range torque. This does not imply that changes or improvements to the stock layout should not be made, but rather that any changes should be of a relatively minor nature to keep the torque in a more usable rpm range. This suggests merely "cleaning up" ports and valves, a ¾ cam in place of a "Super Terrible" and perhaps two carburetors instead of three or more.

So, to obtain more torque and consequently better performance from an unblown engine at low and medium engine speeds, without sacrificing the top end too much, we must: (a) Increase the engine's piston displacement. (b) Increase the compression ratio. (c) Work out the best carburetion—valve timing combination, either by experimentation or following experience of others.

I trust that these columns have served to answer many questions regarding better performance at normal road speeds because "roadable" seems to be the magic word among hot rodders these days.

Words From The Editor

THIS MONTH we have quite a surprise in store for those of you who might think they've seen just about every possible approach to drag racing—engine and chassis combinations, that is. Most of us have, at one time or another, seen some fairly wild pieces of equipment charge down the local tarmac, but this particular little bomb sort of steals the show.

It seems that Chuck Baker of Paramount, California, became a little disturbed over being consistently shut down Sunday after Sunday at Santa Ana's drag strip. This alone can mash a man's ego no end, but the clincher was that the hot dogs that were showing him how to go fast were his two best friends and his own brother—*this can bring sheer exasperation!*

In desperate answer to this, Chuck took dead aim at all concerned, pulled the stops and bolted together a small package of brute horsepower that to date has netted him fifteen trophies for top eliminator in his class. How the tables were turned and how he did it makes interesting reading. Story starts on page 34.

For you readers who have been writing in, asking how to improve your cars' roadability and handling qualities, check out pages 18 to 23. Ray Brock, our new fireball Associate Editor, sat down with Al Swanson, one of the country's top shock absorber authorities, and got the straight dope on how to replace ineffective tube shocks on late model cars. He also shows you how to install the tubular goodies on early model equipment.

You custom enthusiasts aren't left out by any means. Splattered throughout the book are how-to-do-its and photo stories on the latest grill restylings and side trim installations. Feast your eyes over the wild '52 Ford rag top belonging to Bob Casey (page 44), a big butter-and-egg man with a wife and four kids. It just "shows to go yuh" that he knows the meaning of a "full house," whether you are referring to his family or his custom.

EVER SINCE the micro midget story "Tempest on a Mud Pie" made its appearance in the February '55 issue of CAR CRAFT, we have been swamped with inquiries. We know that we have some of the sharpest readers around, but to call the plays before they start isn't fair. We have had on tap a micro midget series which we were going to start within a couple of months, but the demand has been too much. Next month we will have on hand the first part of the series which will deal with an action feature, rules and body specifications—Part II and III will cover construction . . . *see you then.*

LETTERS

BACKYARD FAN—THEY'RE THE BEST KIND

Dear Sirs:

I have been reading your magazine for more than a year and have almost every copy.

Between my brother and me, we've come up with our own custom which took a little more than 8 months to complete; ours is a '52 Ford Victoria.

It was repainted with 17 coats of Iris color lacquer paint for the bottom and 17 coats of Ivory for the top. It carries a '54 Olds grille with bumper guards removed, also has chromed headlight rims. It has been lowered

5 inches in the rear and 2 inches in the front, also shaved and decked. Trunk lid is operated electrically. Interior work was done by my brother Ed and me; dash and metal work was painted two-tone Iris and Ivory, like the exterior. Steering wheel was given the custom touch also.

I have gotten by ideas of customizing from your magazine and hope to do more. Thank you very much.

Yours truly,
Frank and Ed Sumowski
Niagara Falls, N.Y.

You're playing our song—Ed.

READY, WILLING—AND ABLE

Dear Sirs:

I have a model B '32 Ford three-window coupe that is slightly worked over, having a '48 Mercury engine and hydraulics. I would like to chop and channel this car and install a large overhead valve engine. Since there are very few cars of this type in my area I would appreciate it if you could supply me with detailed information on the channeling operation or advise me where to find it. I have the necessary equipment to do this job and would like to do most of the work myself. The information I would like, would include:

A. Channeling of my car.

B. Are floorboards dropped between frame on channeled cars?

C. In order to get rid of rattles what is the best method of mounting the body back on the frame?

In the near future HOT ROD *Magazine*

will do a step-by-step feature on channeling. —Ed.

D. I intend to mount tubular shocks on this car and have wondered if certain positions would impair the action of these? I have seen them mounted at 45° and 90°.

Coming up, CAR CRAFT *has a story on the correct way to mount shocks this month.*—Ed.

E. Methods to help roadability?

Good *shock absorbers are of major importance in making your car stick to the road.* —Ed.

F. I would like to kow the best rear end ratio of a '47 Zephyr transmission with O.D. to be used in conjunction with the new engine.

A 4.11 to 1 rear end ratio will give a final ratio of 2.87 in overdrive. This should be as much gear as you can pull.

G. How would a car of this type compare to a new car for holding the road?

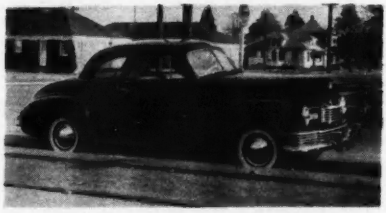
When it comes to holding the road, there is nothing wrong with the solid axle. The ride may not be as soft as the late model cars but if you have anti-sway bars both front and rear, the car should stay on the road exceptionally well.—Ed.

Very truly yours,
James Hawthorn
Hamilton Square, N.J.

MODIFIED LE MANS

Dear Sirs:

In the "Letters" column of the February '55 CAR CRAFT, a letter appeared from reader Wm. Clare, in regard to customizing



a Nash Ambassador coupe. Enclosed please find a snapshot of my '48 Ambassador coupe, which has had a mild dechroming of the hood, lowering blocks in the rear, new black paint, and new upholstery inside.

A '54 Nash LeMans engine is being modified to go into the car. It will be 252 cu. inches, ported, ¾ cam, Mallory ignition, dual exhaust, and be equipped with the stock dual Carter side draft carburetors. I expect to use the car in local drag competition this next summer.

Bill Peterson
"Road Knights"
Portland, Oregon

BACK ISSUES DEPT.

Dear Sirs:

Have just had the horrifying experience of finding that my two-year-old son has been "reading" my collection of '54 CAR CRAFTS and my wife has tossed out the pieces!

All that terrific dope that Messrs. Eddy and Brown had on valves, nitro, etc. that I needed is all gone.

Can you possibly supply me with all 12 issues for '54? I'm keeping my fingers crossed.

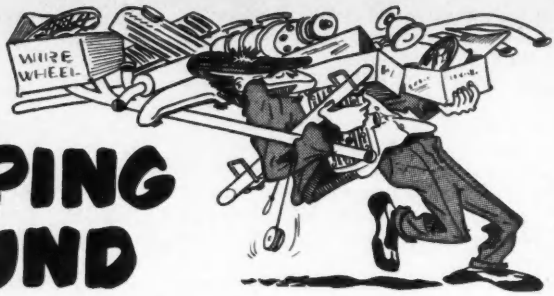
If you can, would you let me know the damages or better yet, just send C.O.D. to my house? I have 2 engines scheduled for full house treatment and since my opinions coincide almost 100% with CC's (especially Chuck Eddy), I'll go right along with his suggestions.

I'm probably older than most of your readers, having been a hot engine enthusiast since long before the war, when a 100 mph A-V8 on the beach was the very last word. I've been away from L.A. about 2 years now and find your technical articles doubly valuable since they save a great deal of time and experimenting on the part of fellows living far from such centers of development as well as providing concise instruction for the novice.

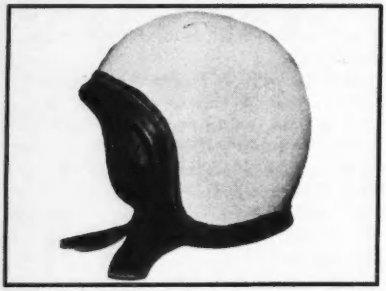
Mr. Eddy can rest assured that the GMC I contemplate will be constructed with all the precision and care which he outlines in his articles. Sloppy engines gripe me intensely.

Sincerely,
J. N. Crews
Ft. Lauderdale, Fla.

In answer to Mr. Crews' amusing letter and, perhaps, to clarify the "Back Issue" question many of our readers might have. All 1954 CAR CRAFT *back issues are available. Only a limited number of MAY, OCTOBER and NOVEMBER 1953 issues of HONK! remain. These magazines may be purchased for 25¢ each, by mailing your request to:* CAR CRAFT *Back Issues Dept., 5959 Hollywood Blvd., Hollywood 28, Calif. Sorry, no C.O.D.'s.*—Ed.



SHOPPING AROUND



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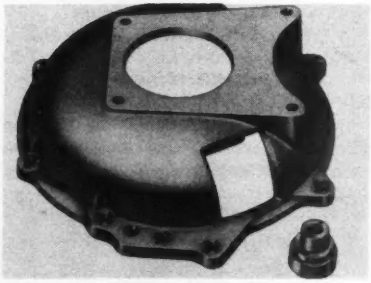

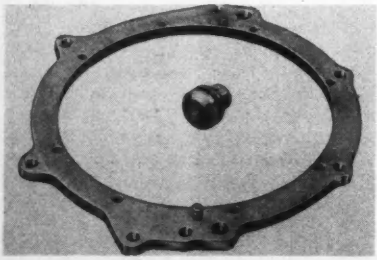

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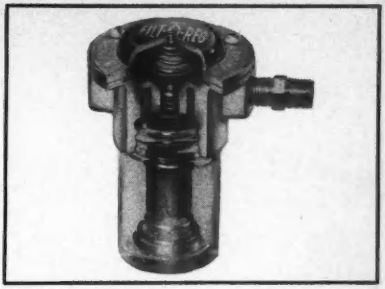

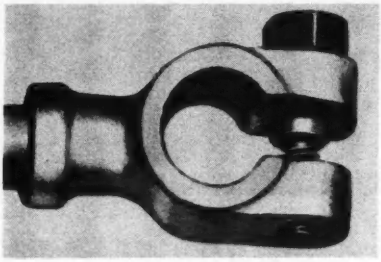

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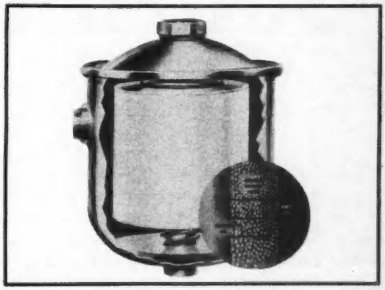

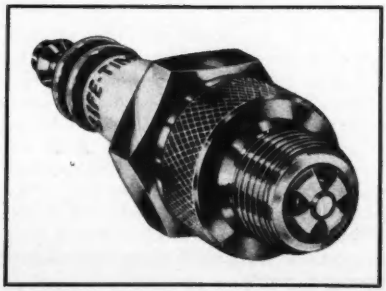

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(continued on page 66)

SOUPING THE '55

PART II By Chuck Eddy

FOLLOWING the last installment's discourse on the stock and modified versions of the '55 Ford and Thunderbird-Mercury engines, let's build a hypothetical engine and follow through most of the procedures necessary to put together a fairly gyrating monster. Naturally, it would be fine if all the operations were actually accomplished, so that we would end up with a completed power plant, ready to impress the next drag strip audience.

However, as time has not yet allowed us more than a beginning of this project, parts of it will be plans rather than actual accomplishments. Let's start with the block . . .

A FEW CHIPS OFF THE OLD BLOCK

Starting with a '55 Merc block of 3.75 inch bore, we're going to first bore it out ⅛ inch. As this is going to be our Full Bore Big Bird engine, the stroke will remain stock at 3.3 inches. which we feel is long enough. If your block is new as ours is, inspect it thoroughly before boring. Look for chips in the oil lines and galleries, casting defects, stripped head capscrew threads; or scratches on mating surfaces which may give trouble later. This is wise before the investment of additional labor expense in the block. As Ford locates the head and the gasket on the block with hollow dowels at the upper outside cap screw holes, the relationship of the gasket edges and the combustion chambers with the bores is maintained. However, this relationship should be checked to see if the gasket will possibly overlap after boring the amount you anticipate. If this occurs, any protruding edges of the gasket should be carefully dressed back to avoid thin edges which might overheat and cause pre-ignition.

Preliminary checking should assure you that the planned boring will go without a hitch, but another check should yet be made. With a *machinist's straight edge* and *feeler* gauges, check the block surface for flatness, both diagonally and across the center of the cylinder block, just above the bores. A three to five thousandths inch feeler *should not* slip under the straight edge at any point. Later on, the same procedure should be used on *each head*. This is important on *any* late engine which uses the .020 inch steel gasket. A warpage of either head or block will not crush the embossed rib on the gasket sufficiently to obtain a good gas seal.

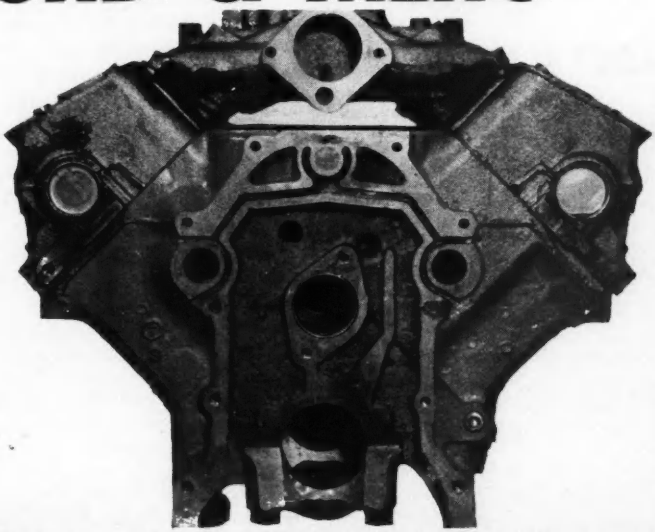
With the pistons at hand for bore diameter reference, the boring may proceed. Follow the piston manufacturer's recommendations for running clearance as this is dependent upon the alloy of which they are made. With low-expansion pistons which are to be used in everyday driving, the skirt clearance should be 1½ to 2 thousandths. If you are heading for the nearest drag strip as soon as the engine is running, hone for clearance, after boring, to allow 5-10 thousandths skirt clearance. The larger clearances, of course, tend to produce some cold starting noises but this compromise is to be accepted if you like "racing clearances" and hot fuels. Personally disliking the "drug store" approach to engine performance, we'll stick with stock clearances and a careful break-in to remove the "mountains" from all the moving surfaces.

TREATMENT AFTER BORING

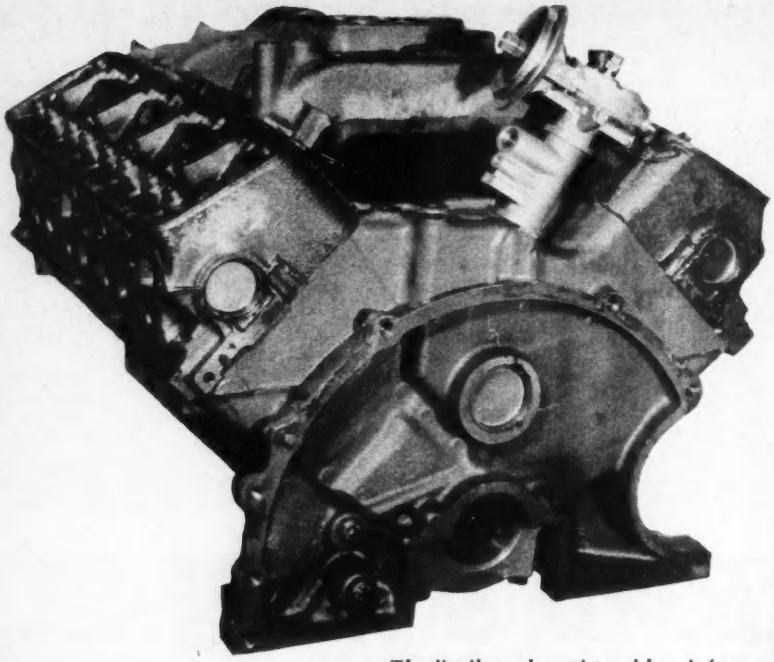
At this point, trouble can start which may wreck your carefully built engine! Many otherwise intelligent mechanics still labor under the delusion that solvent is the medium to use for clean-up after boring and honing. The only acceptable practice is to scrub the bores and all the rest of the block with a bottle brush and liberal quantities of *hot, soapy water!* Solvents do not destroy the ad-

(*Continued on next page*)

FORD & MERC



When the heads are milled, the manifold face on each head must also be cut to permit manifold to match. The ratio is 5 to 7 or .050 off heads requires .070 off port surfaces.



The distributor base pictured here is from a T-Bird engine. The tachometer drive should make it a wanted item but the distributor drive gear must be changed for Fords.

'55 FORD & MERC continued

hesion of oil films on abrasive particles. The possible result after the engine is run might be rapid ring wear or, in more isolated cases, piston skirt wear. Follow up the cleaning operation *immediately* with a careful coating of the cylinder walls using a rust-inhibitor engine oil. Corrosion sets in rapidly after the removal of oil residue from the walls!

Note that we previously did not mention polishing of the bores. Selection of the proper hone grit should remove any boring ridges but *not polish* the walls. The hone should be worked rapidly up and down in use to produce uniform diamond-shaped scratches in the walls. These are actually very shallow, but deep enough to retain some oil on the walls during the break in, to insure against seizure. Without proper honing to the final size, the boring ridges remain, to wear rapidly and widen the ring gaps simultaneously. Remember that .001 inch ridges, in wearing down, widen the ring gaps .003 inch, plus a lot more for the increased ring wear rate. Add to this a considerable drag due to wall roughness and greater break-in temperatures and you have created a "built-in head wind."

OTHER BLOCK OPERATIONS

With the new cylinder head gasket in place on the head locating rings, the lower combustion chamber outlines should be scribed around the inside edges of the gasket. Remove the gasket and carefully dress the cylinder bore edges in this lower area to a 1/32 inch radius. The purpose is to avoid sharp edges at *any* point in the combustion chamber which might become hot enough to pre-ignite the mixture.

If the use of extremely high valve lifts

is anticipated, it would be advisable to install both heads with valve gear and valves installed to check for sufficient clearance between the valves, full open and the lower edge of the cylinder bore. As our projected engine will not use super-pogo stick valve actuation, checking at this point should reveal safe clearance margins.

USING OUR HEADS

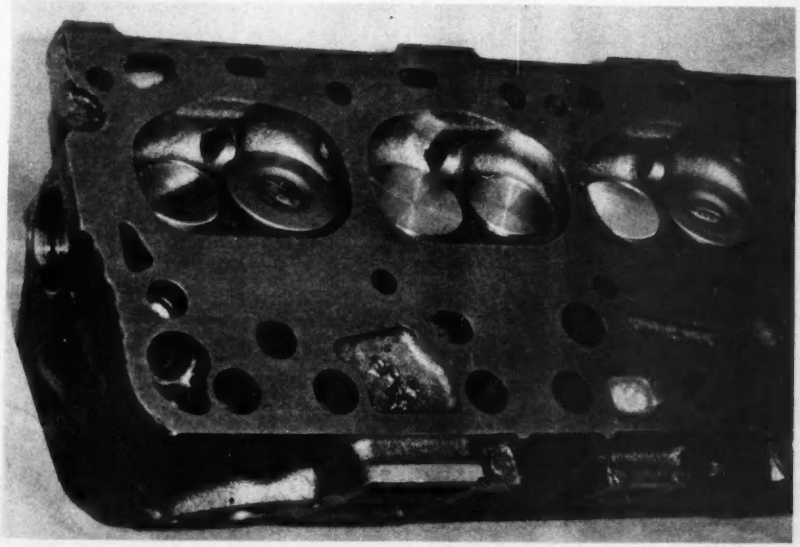
Building this engine from scratch, we will use new B5A-6049-D heads. On the 272 engine, these produce 7.6 to 1 C.R. and 8.1 to 1 on the 292, but on 311 cubic inches they will pack about 8.5:1! Milling for compression gain should be done carefully as the difference between the optional 8.5 head on the 272 and the std. 7.6 head is only .035 inch. See the March issue of C.C. for chart. Also to be watched is the finish obtained when milling. As the average milling job may give trouble either from grooving or warpage of the head due to improper setup, we suggest milling to .010 inch *short* of the desired depth and finishing up the final dimension with surface grinding. If you are extra finicky at this point, measure the combustion chambers with table salt and a 100 cubic centimeter graduate to determine whether your last grind should be on a slight taper to equalize the chamber volumes. Equalizing could also be done as a final operation with the die grinder, but surface grinding is faster and requires far less material removal.

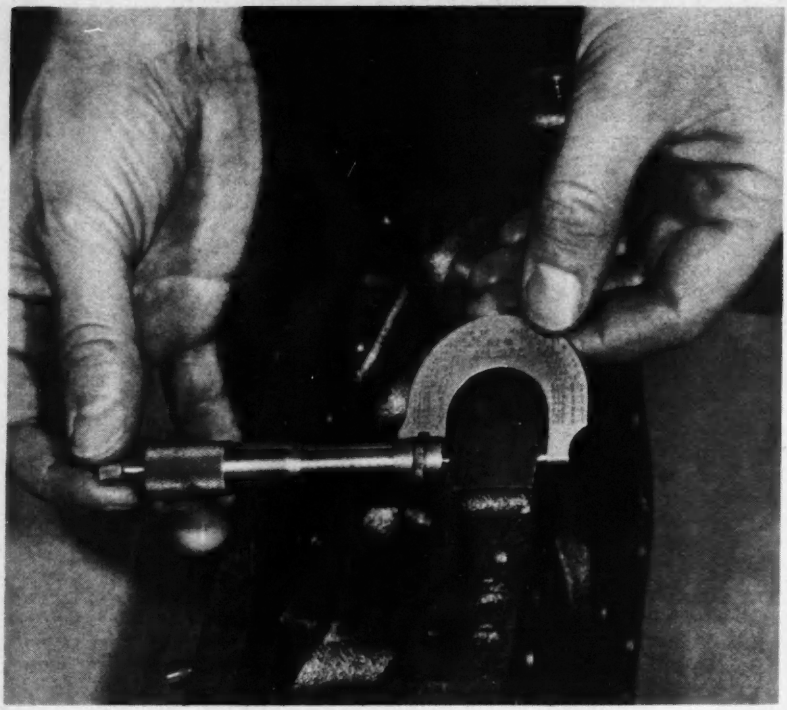
A cardinal rule to observe when milling these heads is to compensate for the changed head-to-manifold relationship by also milling the *manifold surface* of the heads. For each .050 inch removed from the *head* surface, .070 inch must be taken from the *manifold* surface of *the head*. Thus, for our contemplated .040 inch head mill, we will remove .056 inch from the other surface. For finish, this surface need not be ground, as the asbestos gaskets used at the intake manifold will tolerate more roughness than the steel head gasket.

To complete the head work, we will carefully smooth out all the intake and exhaust

(*Continued on next page*)

Experimentation with intake valves gives these comparisons. Lincoln 2" in left chamber has restricted breathing around valve. Valve at far right is stock 1.78 intake while large valve in center chamber is a 1.78 inch stock intake which has been lightened.





A stock '55 head checked in this manner should measure approximately 1 inch. The optional Merc and T-Bird 8.5:1 head will check out at .965 or just .035 less than stock.

'55 FORD & MERC continued

passages that can be reached. We said smoothed, not polished, as the passages do not have to look like a fly-skating rink. We'll spend our time port-matching instead of polishing.

PROPER POPPERS

To make the valves feel at home, sixteen comfortable seats will be prepared according to the outlines in Porting for Power, Oct. '54, CCM.

For phase I in our testing program, stock intake and exhaust valves will be used. Feeling that some test work with valve sizes and cam types will be profitable, we have arranged for dyno checks to be run as each change is incorporated. As nothing significant is learned without careful analysis, only *one* engine characteristic should be altered at a time. Following this rule, we intend to evaluate first the stock valves, second, lightened valves with stock sizes, third, 1.90 inch intakes made from the '55 B5Q-6507-A truck valves, and if time allows, 1.62 inch special exhaust valves. We hope to tabulate, evaluate and cogitate the results and feed 'em to our long suffering readers in some future opus.

The valve spring tensions will be set to about 65 pounds at a length of 1.81 inches. As the intakes will lift better than .400 inch, the valve "open" measurement will be in the neighborhood of 1.4 inches with a tension of about 150 pounds on the springs. This should be about ample to allow the 5200-5400 rpm for hp peak, of which we hope the engine is capable on gasoline.

PISTONS

Coincidental with this Big Bird project is the development by Art Sparks at Forged True Piston of a line of larger diameter forged aluminum pistons. Accordingly, the engine will be the guinea pig for the 3.87 inch versions. We understand these will be available in about one month to the public, in bore sizes starting at 3.75 inch, to 4.25 inch monsters. As most of you may be aware, forging produces a piston of exceptional strength and uniformity. Because of the higher tensile strength, the amount of material can be reduced, compared to a cast version, to produce a lighter piston. The desirable result is a diminished bearing load at high rpm due to a decrease of reciprocating masses. The ring setup has not yet been settled, but it will be similar to most late overheads. We anticipate one test of the new Grant rings for the T-Bird, perhaps in the second engine of the project, to evaluate their low-friction characteristics.

CAM CHATTER

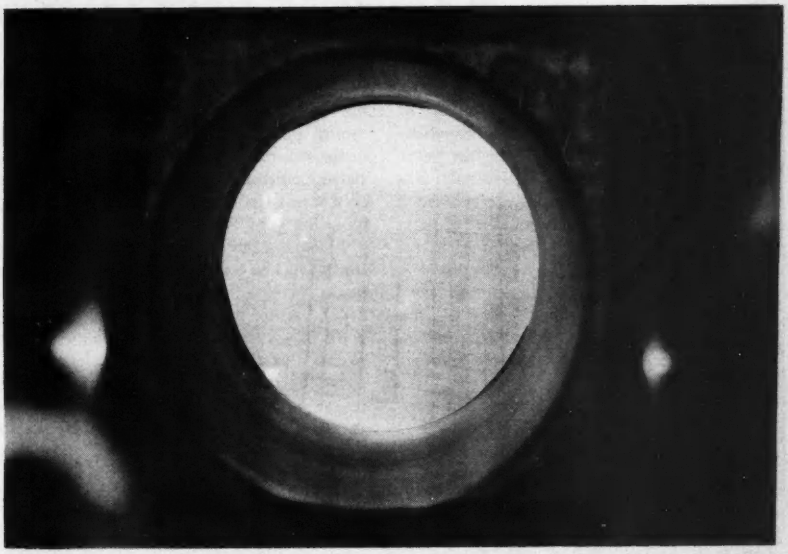
The natural third party in this venture is Harman-Collins, who have excellent dyno facilities, complete with an air-flow gauge. As Harman-Collins is deep into a cam program for the late overheads, they too will benefit from the findings. The stock B5A-6250-A camshaft will be used to start the proceedings, with progression to greater duration, overlaps, and lifts in succeeding tries. Our present selection for the all-around cam looks like this:

Intake: Lift .397 inch
opens 21°BTC, closes 67°ABC

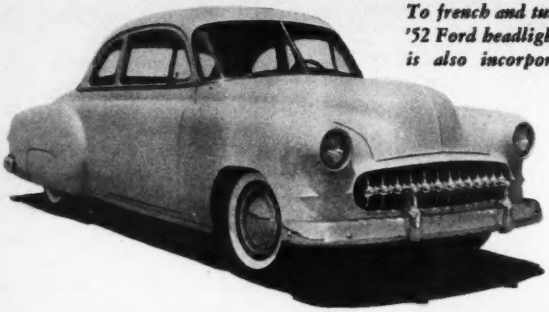
Exhaust: Lift .370 inch
opens 59°BBC, closes 21°ATC

This is intended to get a reasonable peak hp without seriously impairing the low end. It is designed for use with a medium-weight vehicle (3250 pounds) with an overdrive transmission. We might go a little wilder on the timing if we anticipated using a Fordomatic. As the engine would never be "lugged" with the automatic, torque below 2000 rpm would not be as critical as with the stick shift. An additional reason for our conservative approach on the rpm aspects of the cam was a talk with one of the contenders in the Stock Class of the Carrera

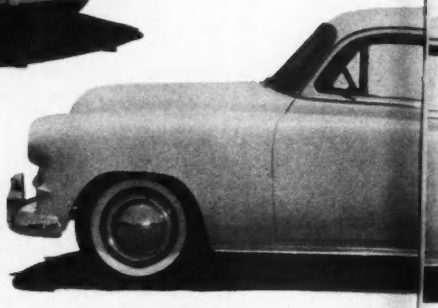
(*Continued on page 60*)



This is the view up through the cylinder of a '55 Merc which has been bored to 3.87 inches. The steel gasket has been located on the head dowels to show gasket must be trimmed.



To french and tunnel headlights, Frank used '52 Ford headlight rims. Peak motif on hood is also incorporated into the headlights.



Recessed Headlights, Grille and Taillights Highlight Frank Williams' Chevy Custom

TUNNELING IS

ASK ANY custom show hound about the roughest class in competitive auto showing and ten to one he'll say that the Semi-custom Class tops them all. Naturally, this class out-draws the other divisions because of the brief limitations and the number of backyard enthusiasts involved but, due to the financial means of the average enthusiast, styling trends therein are often repetitious. It all boils down to this—if you're going to drive home with a trophy in this class, you will have to dig a little deeper than the standard nose and deck theme.

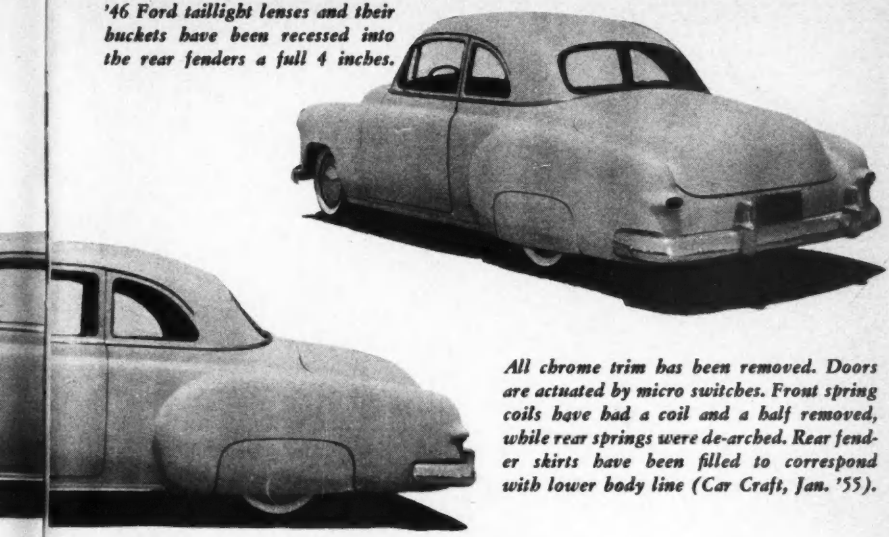
Frank Williams' '51 Chevy custom is a fine example of just the type of show-winning car we are discussing. Naturally, it incorporates the nose-deck and trim removal motif but, if you look closely, you will notice the careful planning and originality behind the grille and taillight treatment. These two restyled components, coupled with workmanship are basically the secrets behind a winning or losing semi custom car.

Frank doesn't take full credit for the car, for, when first contemplating a tentative style, he consulted with Miller's Body Shop of Pasadena, California, who were later to do the work. Every detail was fully planned before so much as a torch was fired.

So the next time you see Frank cruising his yellow Chevy up to the entry gate at the local auto show, you'd better lay on another coat of spit and polish . . . brother, you've got a hard competitor to beat!

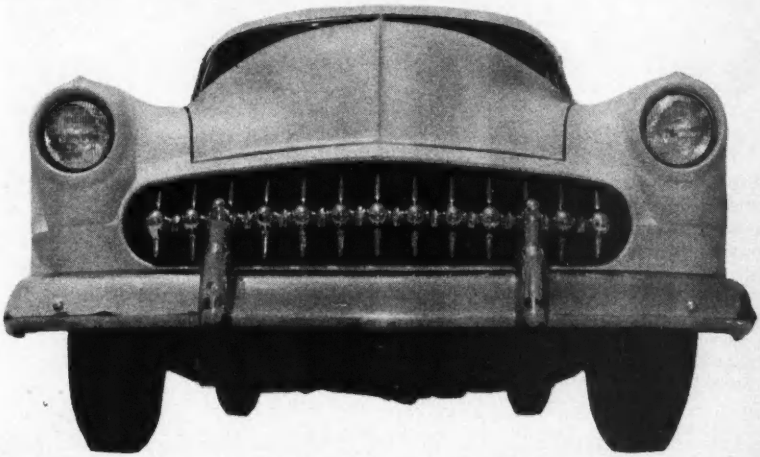
Photos by Tom Medley

'46 Ford taillight lenses and their buckets have been recessed into the rear fenders a full 4 inches.



All chrome trim has been removed. Doors are actuated by micro switches. Front spring coils have had a coil and a half removed, while rear springs were de-arched. Rear fender skirts have been filled to correspond with lower body line (Car Craft, Jan. '55).

MY BUSINESS



'53 Chevy components make up grille. A chrome grille shell was moulded to the front body panels. Two '53 bars were cut down and spliced together to form straight bar, which has 13 vertical grille bars mounted to it in a stock manner. End bars must be reworked.

IMPROVE YOUR CAR'S ROAD-ABILITY WITH BETTER . . .

SHOCKS

WHEN the mail from our readers gives us the impression that a particular subject requires some explaining, we try our best to do something about it. A great number of letters have come in recently asking how to install tubular shocks on early model Fords and also just what effect a stiffer shock would have on some of the later model cars. To get the most authoritative answer, we went to the man who has an unparalleled record in the field of shocks. This man, Al Swanson, owner of the A. J. Swanson Shock Absorber Co., at 1526 North Ivar in Hollywood, Calif., equipped all 33 qualifying cars in the 1954 Indianapolis "500" and is also the shock expert behind the winning Lincolns in the past three Mexican road races.

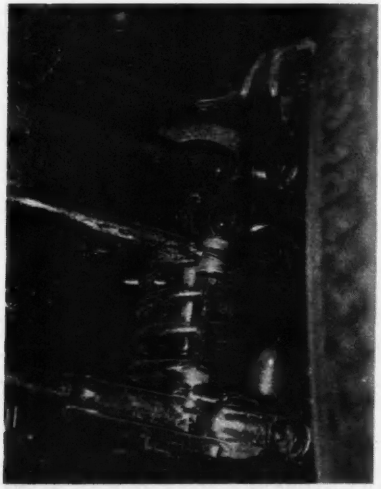
While we were in the Swanson shop taking pictures of the installation of tubular shocks on early Fords, we also took special interest in the other cars which came in for servicing. The bulk of this business was not older cars with worn-out shocks, as you might expect,

(*Continued on page 20*)

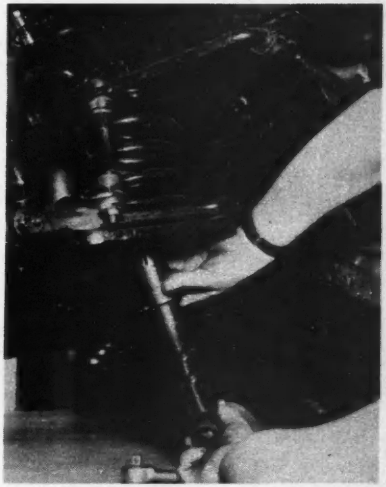
By Ray Brock

Photos by Tom Medley

Indianapolis driver Jimmy Reece, right, has Al Swanson explain the simple adjustment procedure for the new Gabriel AdjustOmatic shocks before installing on Jimmy's '55 Buick.



Most late model cars use a tube shock inside front coil spring. By loosening nut on top of shock and bracket below, shock drops out.



Stock shock is pulled from coil on Reece's Buick. AdjustOmatic is installed in its place within the coil in a very few minutes.

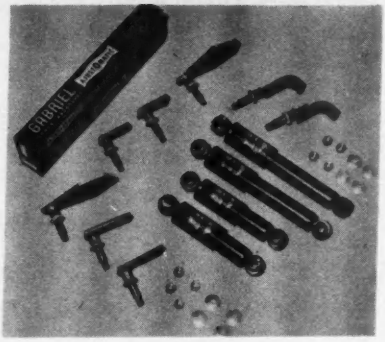
SHOCKS continued

but new cars with very few miles on them. Three 1955 Buicks, an Olds, a Ford, some of them which had been driven less than a thousand miles. Al explained that these cars, even though new, can be completely transformed from one which dances and bounds down the highway to one which will hold the road better and give the passengers a safer and more comfortable ride. In an attempt to satisfy the average car buyer who merely putts around town with an occasional Sunday ride for diversion, Detroit engineers consistently design a car which lacks the road holding quality needed for moderately fast highway speeds or cornering.

Nearly all of the latest Detroit creations are fitted with single-acting tubular shocks which control only the rebound of the car. Swanson recommends that the light stock shock with 90% rebound and 10% compression action be replaced with the newly developed Gabriel AdjustOmatic. The AdjustOmatic shock has three settings: soft, which is slightly stronger than stock with a 70%-30% rebound to compression ratio; medium, with a 60-40 ratio that is much stronger than stock; and firm, a 50-50 ratio with a very firm setting. When AdjustOmatics are installed on all four corners of the average automobile, it is no longer average. With the shock setting varied to fit the driver's desire, a feeling of security replaces the old unstable ride.

For cars not using tubular shocks, such as the double piston type rear shocks on Buicks, Al replaces the valve with one of his own design. This valve not only makes the shock action much firmer, but also changes it from a single-acting to a 50-50 double-acting shock. When replacement shocks of this type are used on the rear wheels, it is only necessary to change the shock itself. For automobiles with a knee action type shock used as part of the front wheel suspension system, replacement with a stronger 50-50 shock will disturb the front wheel alignment so it is necessary to re-align the front wheels after changing knee-action shocks.

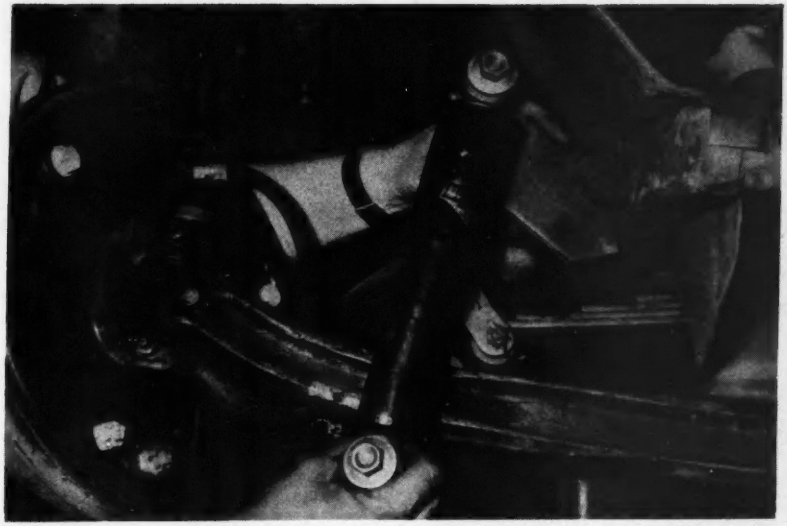
(Continued on page 22)



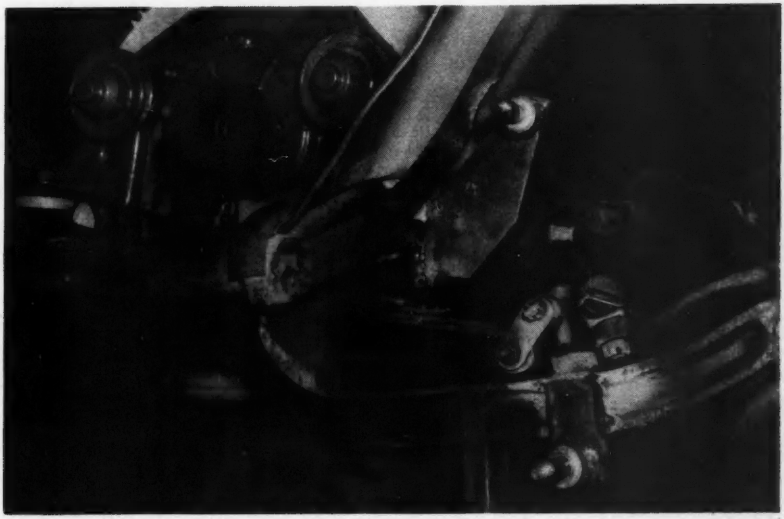
Swanson's kit for installing tubular shocks on early model Fords. Brackets need only be welded to the frame and axles in the proper position and then have the shocks bolted on.

INSTALLING TUBULAR SHOCKS ON EARLY FORD

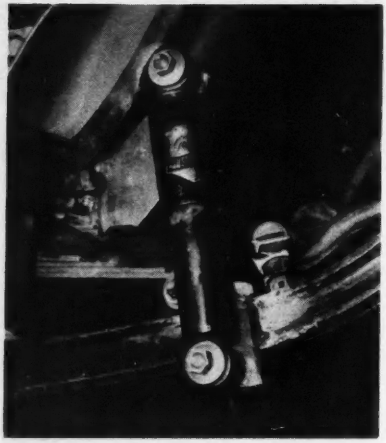
Shock should be measured and mounted to have equal travel distance either direction.



With shock set at mid-travel position, shock is bolted to brackets and held in position between frame and front axle to check for clearance of steering, fender braces, etc.



Brackets are welded to frame and axle after they are located. Old stock shock connection on top of spring shackle perch can be cut off with torch to eliminate excess baggage.

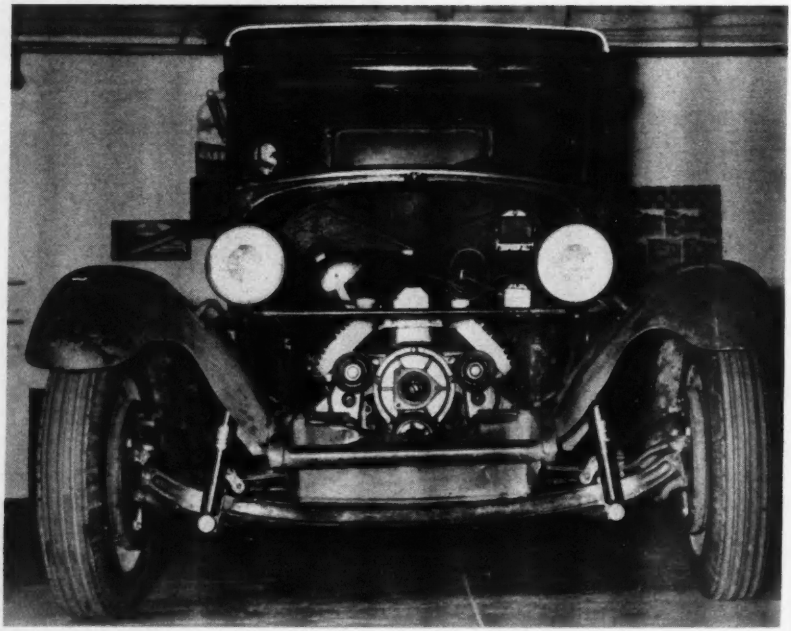


Mounting on front of '29 Ford was cramped because of steering arm travel so slight notch was cut in fender brace for installing.

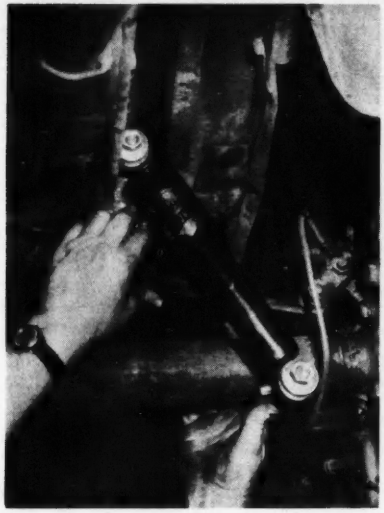
SHOCKS continued

The shock supply at Swanson's shop is so complete that he can outfit any car which comes through his door, whether it be an Indy car, stock car or sports car. Early Ford shocks can be replaced with either reworked stockers with adjustable 50-50 action or with tubular shocks by using the conversion kits available.

If you really want to sell yourself on better shock absorbers, take a before and after ride in any stock car which has had the single-acting factory shocks replaced by a set of good double-acting tube shocks. You will soon have your own car fixed up and wonder why somebody hadn't told you about them long ago.



Correct mounting angle should not exceed 45 degrees. 30 degrees is ideal angle but can not always be attained because of interference. Angle helps eliminate side sway.

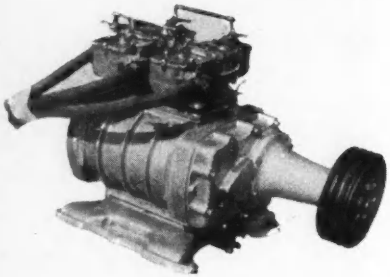


Same procedure used on rear as front. Shock is set at mid-travel, fastened to brackets and held between axle and frame to check fit.

After making small tack welds, shock should be removed while brackets are welded tight. This prevents burning the rubber bushings.

Finished installation on rear axle of early Ford. Adjustment can be changed easily on AdjustOmatics by removing lower hookup, collapsing shock, twisting to marked settings.

FORCED AIR HEAT

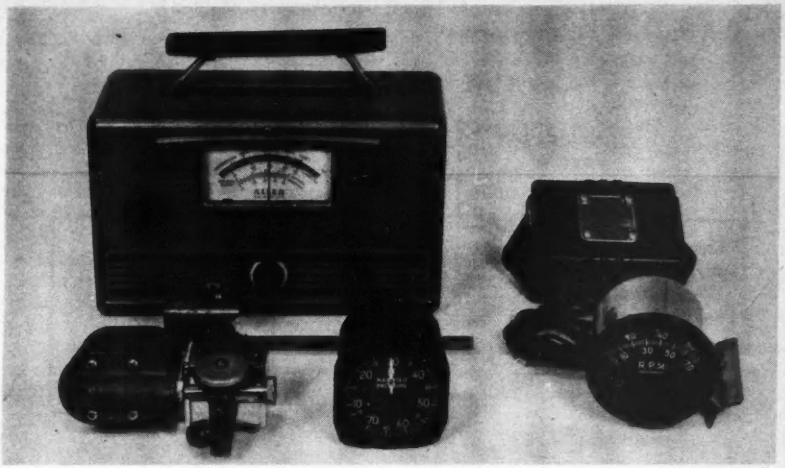


STOKING THE FURNACE . . . THE COMPETITION VERSION

Part II By Chuck Eddy

IN APRIL'S installment, we talked mostly about how blowers work and some of the installation problems. This time we'll discuss, from both the theoretical and practical standpoints, how to obtain near-ultimate outputs from competition installations. The first question might be, "How much boost should a competition engine run?" This, naturally, cannot be exactly answered, anymore than you could tell how much horsepower would be required to lap Willow Springs road race course in 1:52! However, to give some idea of what we are trying to accomplish, a chart might prove helpful. This chart is an expanded version of last month's pressure chart. It is intended to give you an idea of how *absolute pressures* in pounds per square inch are related to *inches* of mercury. On the right side, the calibrations are in pounds per square inch and the left side is calibrated into inches of mercury. First, notice that any given member on the right equals roughly one half that number in pounds per square inch. The relationship, expressed exactly, is that one inch of mercury equals .4912 PSI. Normally, just divide inches of mercury by two to get pounds per square inch. We hope that this isn't getting too technical, but we won't apologize too strenuously, yet. If you can not follow this far, blowers are not for you!

You should also have appreciation for the fact that some measurement needs to be made of pressures on any supercharged engine to tell what is happening. Pressure measurement, properly interpreted, will tell you about carburetion, percentage power increase, safe limits of operation, even the effect of tire size and gear ratio changes! The chart is not intended to indicate iron-clad limits of operation, but to act as a map to let you know which county you're in. Notice the maximum indicated reading of 90 inches mercury is used as an ultimate pressure figure. Few blown engines ever attain this condition consistently. We would term these "sprint" engines, as the fuel requirements, plus lack of engine dependability, rules out long durations *at that boost.* Fuel requirements for increased pressure follow the trend of requirements for *high compression ratios* but with some important differences. Thus we find that for obtaining higher outputs out of an engine by increasing the C.R., the increase in *octane requirements* would be much greater than if a supercharger was used to obtain an equivalent horsepower gain. Stated another way, it was found that in testing for output with a given octane fuel, the compression ratio increase produced a gain of 7% in horsepower, while the same fuel allowed a blower boost great enough to produce 62% gain! Right here, we ought to point out that C.R.'s above 7:1 in a late overhead engine will not generally tolerate boosts above 40 inches mercury on



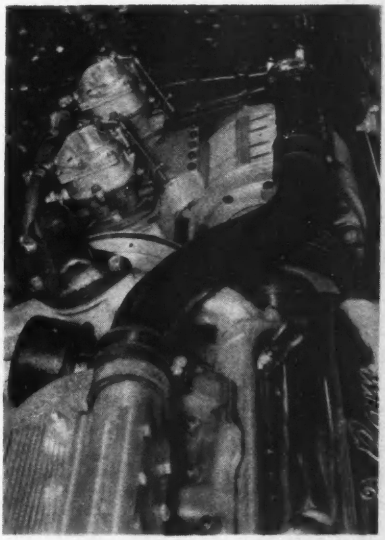
Here are the necessary instruments to show you how and why the blower works. At left, Allen exhaust gas analyzer; right, tachometer; center, dual manifold pressure gauge.

gasoline. Generally, it is wiser to decrease the C.R. to below 6:1 if boosts in the 50-70 range are anticipated. Don't play both extremes against the middle or you'll smack up against the law of diminishing returns! The usual result of violation of this law is detonation and rapid piston burning. Compromise your C.R. with high boosts or lower the boost to a safe limit with higher C. Ratios. When we spoke of detonation being due to poor mixtures in our last month's effort, we neglected to mention that too high a compression ratio may be the villain. If the blower is buttoned onto what Jo Blough thinks is already a hot engine, maybe he forgets that the heads or pistons should be changed, to lower that built-in squeeze! We'll conclude these comments by warning that *any* combustion chamber characteristic which tends to promote detonation is magnified by supercharging.

MEASURING THE PERFORMANCE

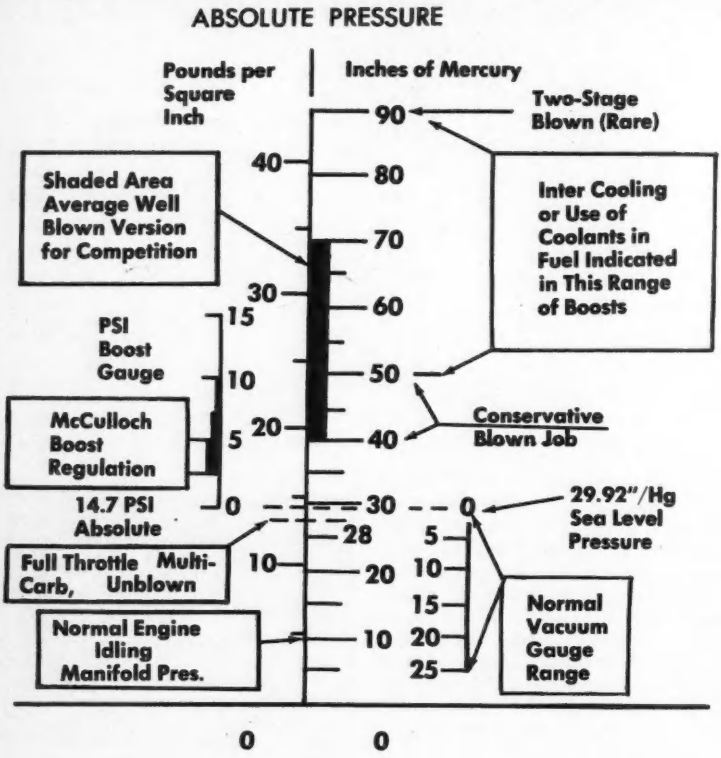
We had a picture made of what are considered to be essential blower instruments for good reason. Many half-hearted blown monsters are churning around without so much as a tachometer! This is essential to

(*Continued on next page*)



An apt title for this homemade blower setup combined with a Dodge V8 engine might be "Ramming a Ram." Vane type blower has pulley on opposite end from conventional manner and is crank-driven by five V-belts.

FORCED AIR HEAT continued



(*Continued from preceding page*)

know *where* the engine performs. The second essential is a reasonably accurate manifold pressure gauge. These are obtainable for as little as $5.00 on surplus, even now. If possible, look for the dual type with Right and Left engine instruments. Both pointers should indicate within ½ calibration of each other, at the barometric pressure. In other words, if you are near sea level on a clear, quiet day, the pointers should read near 30 inches mercury. Both sides of the instrument should function by indicating higher if you *blow* into the fitting and lower if you *suck* the openings. In use, one side of the gauge should be plumbed into the cavity below the *carburetor throttle plates* and the other gauge, *below* the blower, into the intake manifold. Comparing the readings then gives differential *across* the blower, plus "carburetor drop," and *absolute* manifold pressure. The carb drop reading should show that the carburetors are producing enough restriction to pull 8 inches mercury (Hg) below them.

If they produced a lower (4"/Hg) reading than we have pictured, it *might* indicate that the installation was over-carbureted. It would need monstrous jets to allow enough fuel to flow to prevent lean detonation. This trouble could easily occur if the old practice of "If a little is good, too much

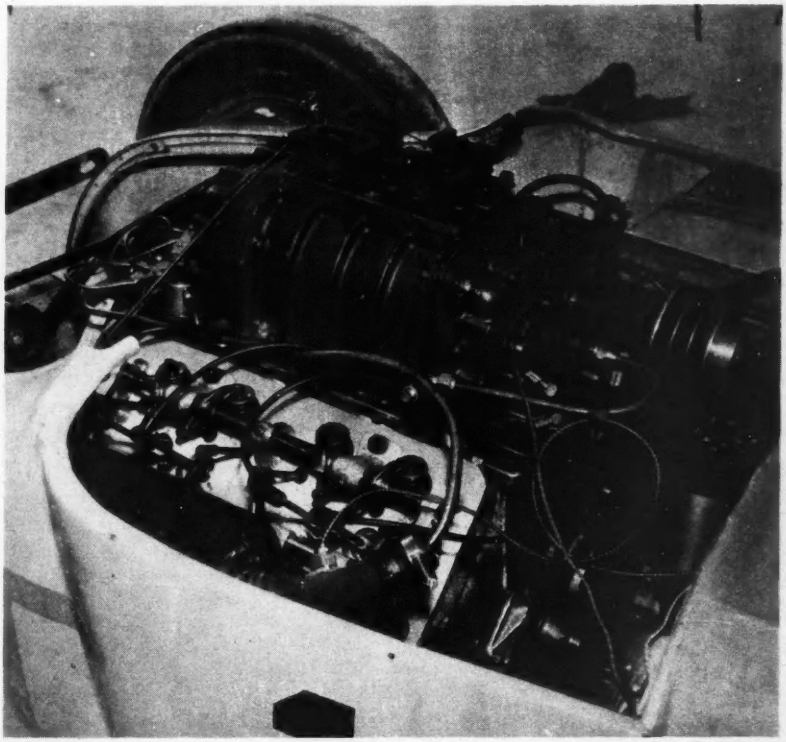
is just enough" was applied. If a carb drop of 12-15 inches was experienced, it would indicate that more venturi area was needed to present less blower inlet restriction.

NOT TOO FAT, NOT TOO LEAN

After the proper venturi area has been determined for full throttle operation, the important tuning for proper mixture settings must be done. For this work, we have found the Allen portable mixture analyzer to be unsurpassed. This instrument is entirely electrical and the exhaust pickup need only be clamped into the tailpipe, the pickup wire strung into the car to the meter and a revealing roadcheck can be run. We have never attempted to use the analyzer for fuels other than gasoline. As alcohol mixtures are usually run overrich for safety's sake, possibly their mixture analysis would only confuse the issue. Combined use should be made of the three instruments, tach, manifold pressure gauge and mixture analyzer, on either an engine or chassis dynamometer.

After mixtures have been checked for proper ratios in the medium power ranges, mixture settings should be determined for *maximum power output* at peak rpm. If the size of the blower has been matched to engine needs and blower drive ratios properly established, the manifold pressures indicated under these conditions of rpm and load should be recorded. They are the conditions under which the bomb should be run for maximum speed. Installing larger tires

(*Continued on page 62*)



GMC blower converted for use with an Ardun Merc. Note fuel pump mounted off front shaft of right blower impeller. Carburetor base butterflies are used to control air input only.

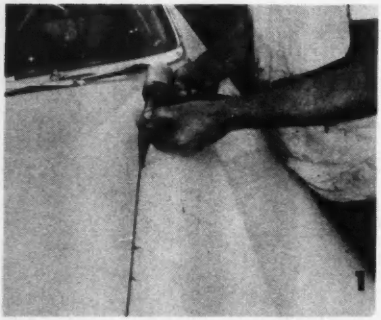
HERE'S HOW

BUILDING A CUSTOM

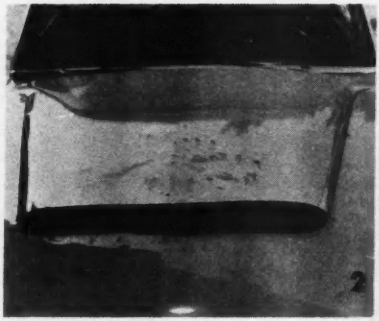
PART II

THIS MONTH we dive into the second part of the "Building a Custom" series, giving you the dope on how to cap the hood, or, rebuild the hood's fake airscoop into a genuine article. Capping the Merc hood in custom terminology means removing the stock airscoop, giving the hood a smooth styling and the appearance of anything but a Merc. Changing the hood in this fashion has proved popular, but, on the other hand, so has the trick of restyling the stock faker into a legitimate ventilator. So, on the following pages you will also find the scoop on how to build a scoop—the choice is yours.

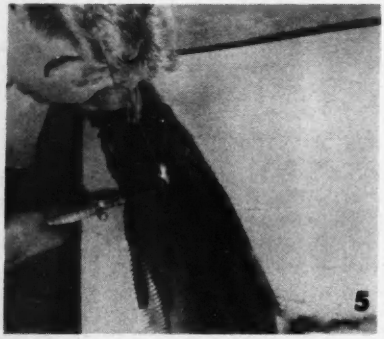
CAPPING THE HOOD



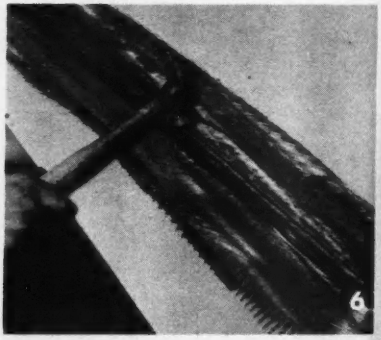
Remove the stock chrome trim from hood. Then with air chisel, cut along seams.



After cutting along the seams, also cut and remove impression from hood ornament.



Trim and V-butt lapped metal along seams. Spot weld seams, then follow step No. 6.



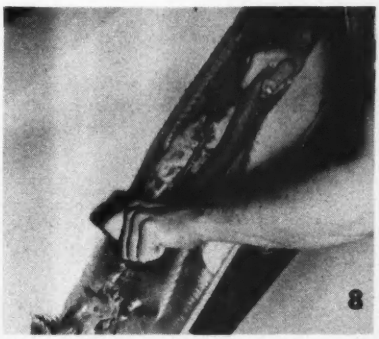
When welding seams, weld up a small area, then employ the hammer-welding process.

Photos by George Barris

With a grinder, setup with a 24 close coat disc, grind paint from the working area.

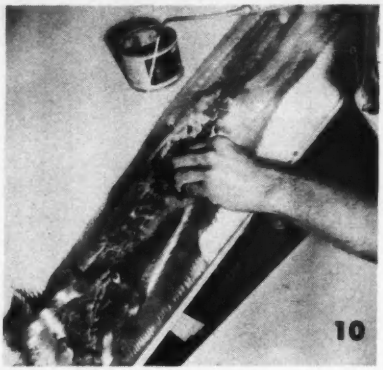
A file spoon and a universal dolly are used to beat down and shrink rise in the hood.

A picking block and hammer is used to work out all low spots and warped areas.

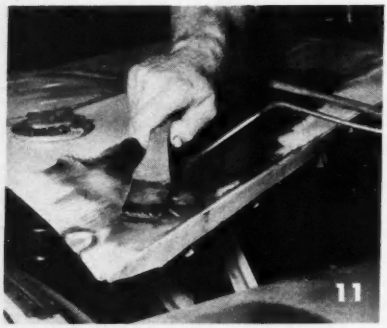


After working out low spots and warpage, work surface semi-smooth with vixen file.

All welds are now cleaned with a rotary brush, complete area again ground clean.



With a soft flame from the torch and a small steel wool pad, tin the complete area.

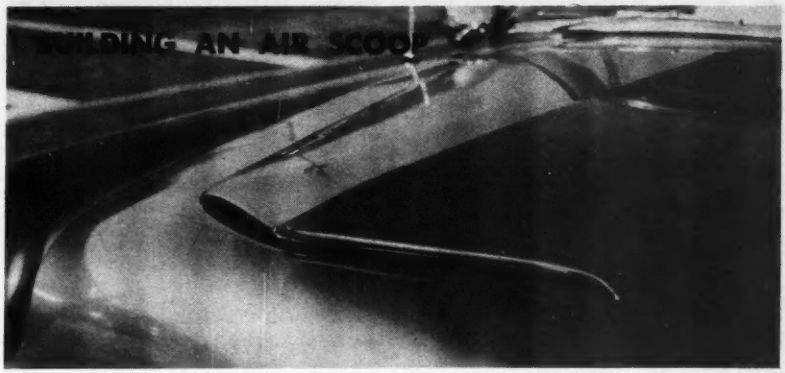


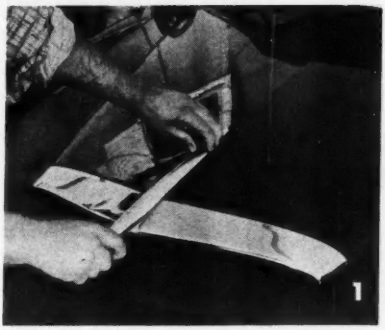
Apply stick lead. Then with a soft flame and paddle, fuse together all lead patches.

The newly leaded sections are now worked smooth by hand filing with a vixen file.

Area is now feather-edge sanded with 220 sandpaper (wet), then metal prep applied.

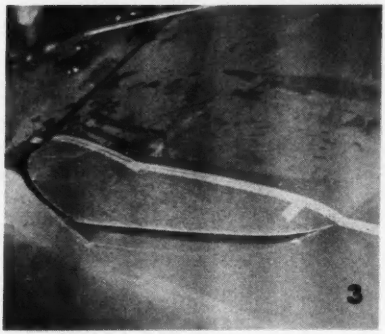
Prime surface, block sand with 360 sandpaper (wet). Surface now ready for paint.



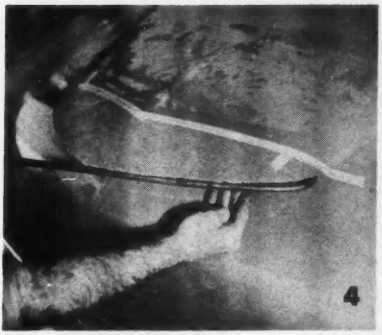


First step is to unbolt and remove the stock chrome trim ornament from the hood.

Chalked area indicates the section of hood that is chiseled out for airscoop opening.

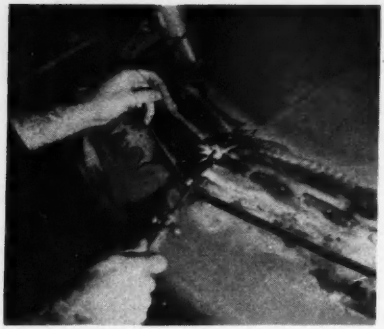


A cardboard template is cut out and taped on the hood to determine contour of scoop.

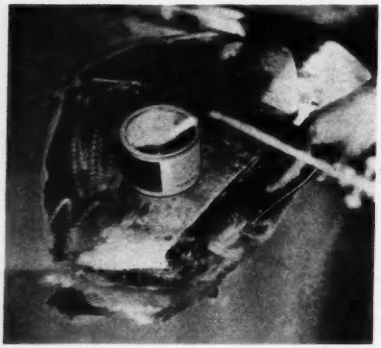


Half-inch hot roll iron rod is now bent and formed to the front edge of the template.

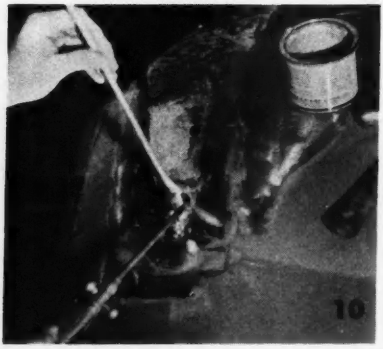
The iron rod is now brazed into position, also small trim holes are brazed closed.



Eighteen gauge scrap sheet metal is used to fill in the area between the rod and hood.



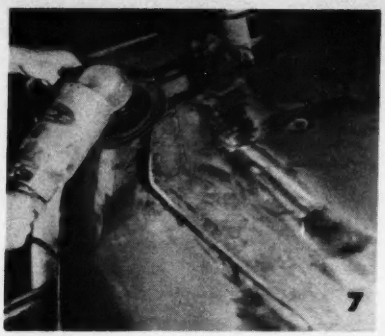
Tinning compound is now applied with soft flame from torch, a small steel wool pad.



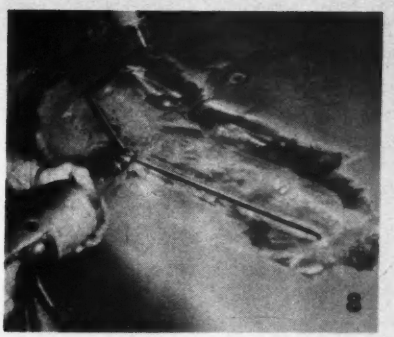
Working small areas at a time, melt stick lead onto the surface with heat from torch.

Feather-edge surface with 220 sandpaper (wet), 180 paper if vibrator is employed.

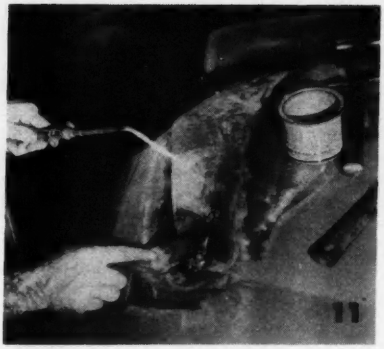
Now clean the bare metal surface with metal prep solution, wiping dry immediately.



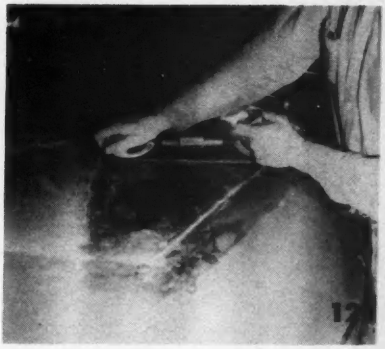
Surface is now cleaned with an electric grinder, setup with a 24 close coat disc.



With surface cleaned, now thoroughly clean weld beads with a rotary brush and drill.



Lead patches are now fused together and smoothed out with torch heat and paddle.



Hood airscoop is now worked semi-smooth by cross-hand filing with a vixen file.

Surface is now primed, block sand with 360 paper (wet). Surface is then ready for paint.

NEXT MONTH

REMOVING HOOD
MEDALLION AND
FILLING BOLT HOLES

•

BUILDING THE GRILLE

OH HENRY!

A "J" bird that really flies

ONE OF the more popular aspects of drag racing seems to be to see who can put the most horsepower in the most innocent looking package. There are literally thousands of stock appearing Fords, Oldsmobiles, Buicks, etc., which will roll up along side of you at the starting line and then give you the trouncing of your life when the flag drops. How would you feel though, if you were sitting behind the wheel of a 300 horsepower Olds and a little Henry J chose you off? If you live in the vicinity of Santa Ana or Pomona drag strips and this should happen, nobody will blame you if you back out.

Seems as though there is a building contractor in Paramount, California named Chuck Baker, who has merged a full house Cadillac engine with a stock bodied 1952 Henry J. The results are just slightly short of being sensational. Baker got the idea for, and built the Cad powered "J" a couple of years ago and has been working to improve the operation of the car constantly. He has still managed to keep it running enough to pick up about fifteen trophies for top class eliminator between improvements. The fastest time registered to date is 107.52 in the quarter. The main difficulties encountered have been the various drive line weak links.

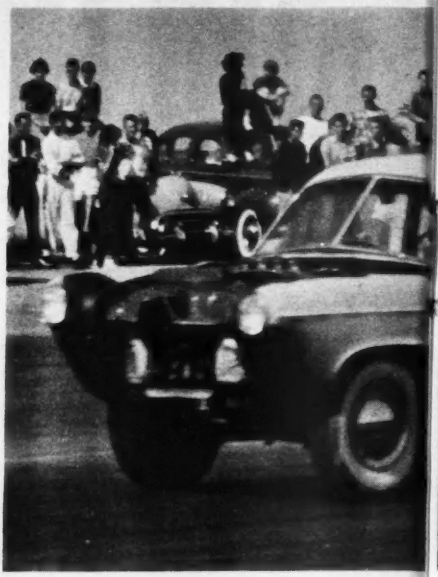
(Continued on next page)

OH HENRY! continued

The engine for this little bomb was built by Chuck and his brothers Tommy and Mack of Baker Brothers Automotive in Paramount, Calif. A 1950 Cad block was bored to $3\frac{15}{16}$ inches and the crank was stroked ¼ inch to $3\frac{7}{8}$ inches. This gives approximately 377 cubic inches, which were fitted with McGurk pistons and combined with a Howard F-5 billet cam, Weiand dual quad manifold, two Stromberg quad carburetors, Spaulding ignition and reworked 1952 heads with oversize valves. A dyno test at Howard's shop produced 298 horsepower on gasoline.

It was not necessary to alter the body, steering, firewall, fender wells or frame to install the Cad engine in the Henry J. New motor mounts were welded to the frame in front and rear, otherwise the only changes were minor. The front suspension was left stock except for Gabriel Silver "E" double acting shocks. The brakes were also left

(Continued on page 38)



When the little "J" takes off on a qualifying run, smoke pours off both rear tires. Rear end gears are locked for better dig.

Chuck Baker starts the final assembly of bored and stroked Cad engine. Pistons used were McGurk slipper skirt type. Crankshaft was sprayed and stroked by Miller Crank Co.

Only cutting of body panels was to make room for shifting lever of 1937 Cadillac transmission. Extra instruments on right side of dash report oil, temperature, gas, etc.

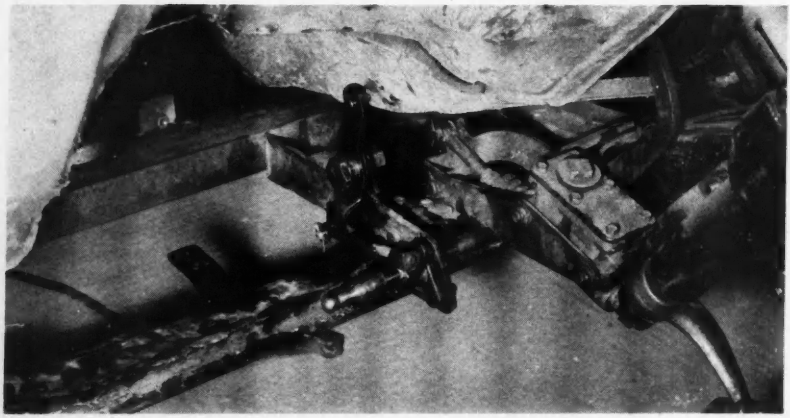
Chuck Baker, left, and Dick Lyon seem to have sneaky smiles on their faces after they drop full Cad engine into chassis for the first time and find that everything fits.

stock and do a good job of stopping the high powered "J," which weighs only 2960 pounds.

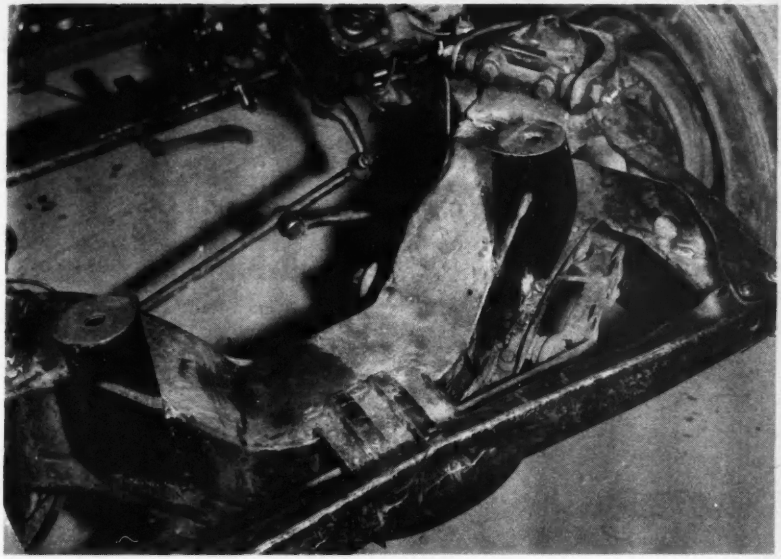
The urge to get the car going was too much for Chuck and Dick Lyon of Lyon Engineering, who made the engine installation, so the first drag strip runs were made with the original Henry J drive assembly. On the second run, the teeth on the ring gear couldn't stand the strain and let loose. A 1941 Hudson rear end was installed next and performed very good except for the lack of gear ratio selections. At present writing, a 1939 Cadillac rear end which has been narrowed four inches is being installed with 4.27 gears.

Another change which is being made at this time is the replacement of the Henry J rear springs with some from a heavier car. The stock rear springs were fitted with overload leaves but still had a bad tendency to wrap up when the power was turned on.

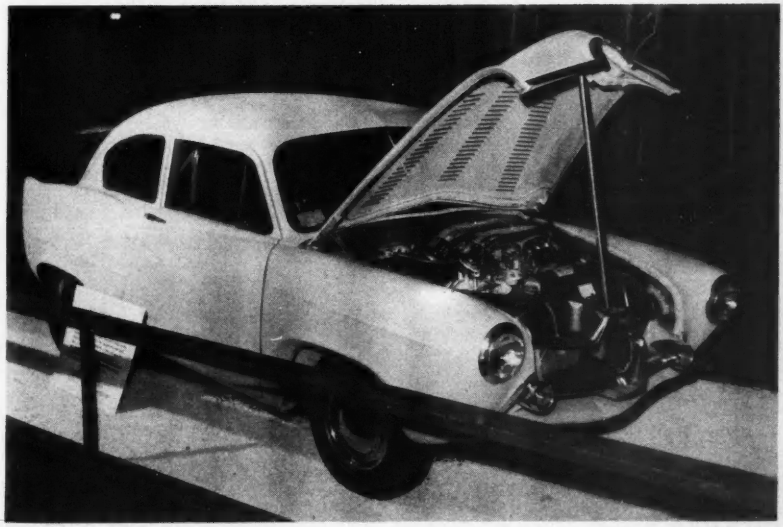
The outside appearances of the car do not tip off what is lurking beneath the hood and the only non-stock items visible are dual pipes and 8.00 x 15 rear tires. Once inside the car, a heavy tubular roll bar, seat belts, extra instruments, floor stick shift for the '37 Cad transmission and the fantastic acceleration reveal the fact that something weird is happening beneath the innocent looking shell.



Clutch linkage had to be moved farther from center of car due to wider Cadillac bell housing, was braced to channel iron cross member installed for rear mount on transmission.



New front engine mounts were fabricated from angle iron and plate after engine was set in position and checked for proper clearance. Removal of front body shell simplified job.



Appearance of the Cad powered Henry J is so neat that it makes a perfect showpiece for automobile shows. Air cleaners are used on the street but removed in competition runs.

FRENCHING '52-'54 FORD TAILLIGHT RIMS

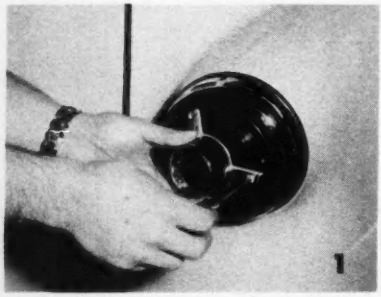
By Dick Day

Photos by Barris

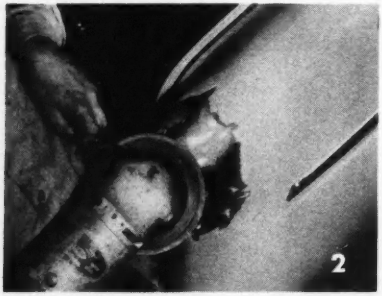
WE FEEL that the proper follow-up to last month's large spread on adapting late Olds taillight lenses to '52-'53 and '54 Fords would be—to now show how you can also french in the stock Ford's taillight rim . . . so be it.

When frenching in the taillight rim on '53-'54 Fords, the stock lens can be retained or restyled with the Olds lens as shown last month. The '52 Ford taillight assembly presents another problem. The stock chrome rim is secured with three screws that pass through the lens and anchor into the taillight bucket. When the rim is welded solid to the fender the stock lens has to be discarded and an Olds lens inserted in its place, or another lens small enough to fit within the rim's diameter.

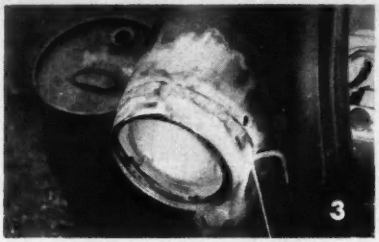
The body shops charge approximately $20.00 per taillight to do the job, but the average guy should be able to tackle it, providing he has access to the necessary body tools . . . and what the heck, you just can't hardly get those forty dollars any more!



First step is to remove the stock inner chrome ring and then the taillight lens.

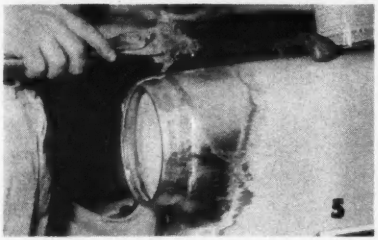


With an electric grinder, set up with a 24 closed coat disc, grind fender tip clean.



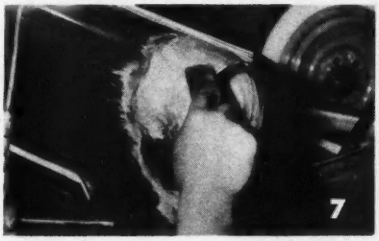
Taillight rim is first secured by tack welding, then welding solid to the fender.

After welding rim to fender, clean welds with electric grinder and rotary brush.

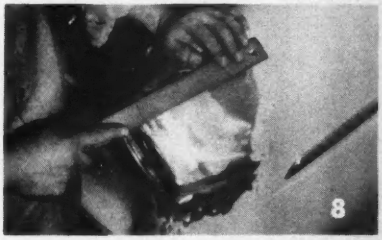


Working surface is now tinned by using a soft flame from torch, and a steel wool pad.

Tinning compound is heated with a soft flame, then surface wiped clean with cloth.

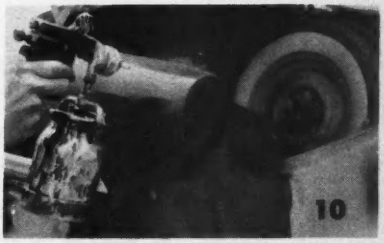


Lead is applied to surface. Lead patches are fused together and contoured with paddle.



After contouring roughly with paddle, let surface cool, finish off with vixen file.

Feather-edge working area with 220 paper (wet), then prime, block sand with 280.



Surface is again prime and block sanded with 360 (wet). Fender now ready for paint.

Newest and Easiest to Install

KELTRONIC TACH

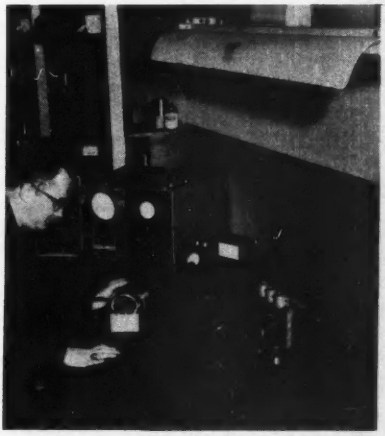
The tach is easily removed from the steering column so that it may be used in the engine compartment for idle adjustments. Either black or white dial faces available.

Completely self contained unit is clamped to steering column by means of a double worm screw clamp. Two wires plug into back of tach, lead to ground, distributor.

THERE have been numerous attempts in recent years to develop a tachometer which needed only an electrical connection to the ignition system to make it work. A few have been marketed and some of them even worked, that is, up to a certain point. The big stumbling block in the early models of this type instrument was that they had a tendency to rob voltage from the ignition at high rpm's, therefore causing ignition failure. An electronic engineer of Glendale, California has finally developed a completely self-contained tachometer which requires only a wire from the tach to the primary lead on the distributor and a ground connection. The inventor, Bert Kelley, has been perfecting this new tach for several years now and has recently swung into full production to meet the demands pouring in.

There are several features about the Keltronic tach which Kelley feels are destined to make it one of the most popular items to hit the accessory field in a long time. Some of these features are: a completely self contained tach which doesn't need a sending unit; full scale

(*Continued on page 65*)



Each tach is electronically calibrated by means of a Strobotac synchronized to a revolving disc with a paint mark on it. The disc is on the end of the camshaft which operates the points to which the tach is connected. Oscillographs check tach volt drag.

Photos by Bob Hardee

THE MARK of a good custom, as reflected in Bob Casey's '52 Ford, is often hidden in the smooth, flowing lines that almost conceal the very presence of the modifications thereto. Casey's Marshmallow White "rag top" doesn't give the impression of being added onto or cut down but, rather, that of looking just the way it came out of the mold . . . the secret to fine custom work.

Working with Styler's Body Shop in National City, Calif., Bob supplied the ideas as fast as proprietors Carroll Gentry and Robie Martinez could wield the hammer and torch. Most pronounced changes, of course, are in the grille, a reworked '53 Chevy shortened to fit a '49 Merc grille shell, and the '54 Buick chrome side strips that dip into the leading edges of the scooped rear fenders.

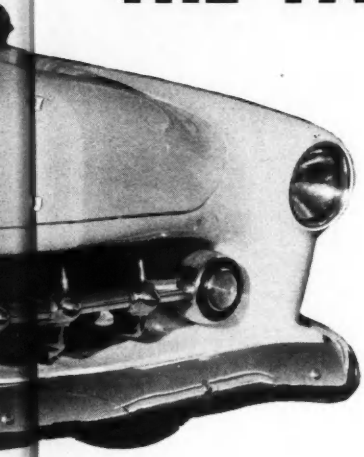
While the headlights have been given the tunnel treatment, the taillights have been extended with the fitting of '54 Olds lens. Part of that smooth, molded effect is created by the rounding of the hood corners and the filling in of all body-fender seams. The rear bumper bolts have been moved to the inner face of the bumper, where they are welded in position, and the remaining holes closed up.

And the longer you look, the more you see; that fine red and white Naugahyde interior custom tailored by Scott's Top Shop of San Diego. Doors operate at the touch of '41 Lincoln push-buttons, recessed below the surface of the door. Accounting for the 4-inch body drop is a lowering kit used on the front suspension and lowering blocks and reworked springs at the rear.

Asked if he encountered any really serious restyling problems, Bob hesitated a moment, then replied, "Well . . . not unless you count my wife and four kids!"

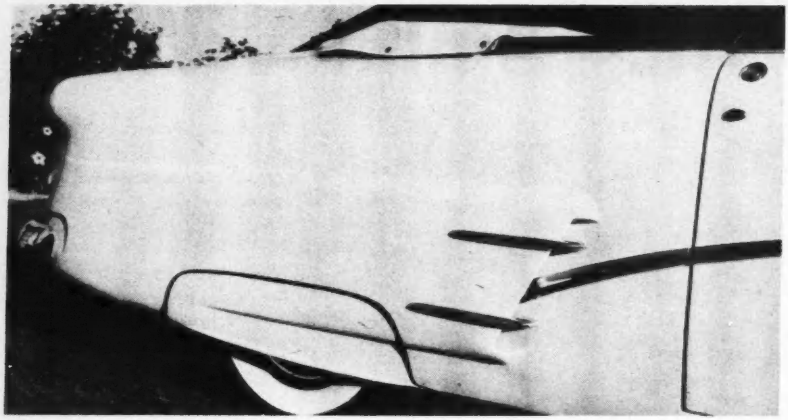
THE FAMILY JEWEL

By Bob Greene



A '49 Merc grille shell was molded to the front body panels to give the stock Ford opening a clean and smooth styling appearance. A grille bar assembly from a '53 Chevy was shortened to fit the grille opening. Hood has slight peak and the corners have been rounded. Both bumpers have the guards removed. Bob installed a lowering kit for the 3½-inch drop at the front.

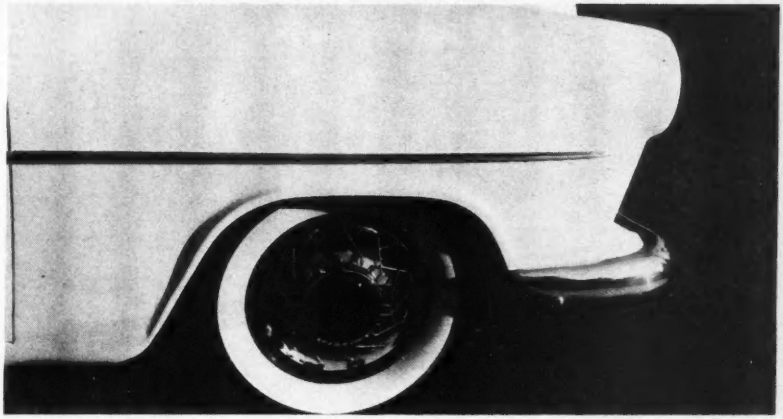
Contrasting with the Marshmallow White exterior paint, Casey chose red and white, rolled and pleated Naugahide. Door handles were replaced with '41 Lincoln manual push buttons.



Airscoops have been built into the rear fenders with '54 Buick spear-type side trim routed between two '53 Merc trim pieces. Note fender contour built into the skirt.

Headlights were frenched to fenders by using the stock light rims; seal beam units were inverted. Both splash pans have been molded to the body, eliminating all seams.

Stock taillight rims have been frenched to the fenders and '54 Olds 98 taillight lenses installed (see CAR CRAFT, April & May '55). Rear of car has been lowered 4 inches.



The front fender flanges have been accentuated slightly. Note how the headlights have been flushed off with the leading edge of fender line, changing angle considerably.

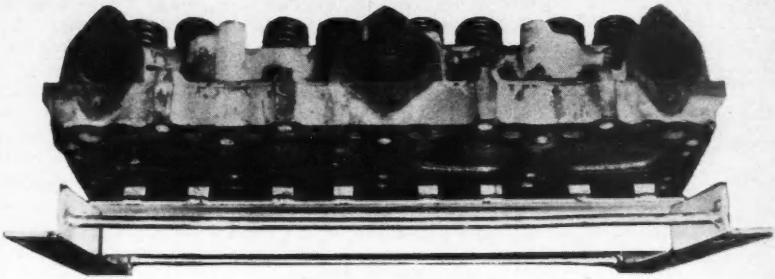
THE FAMILY JEWEL continued

Garage Gimmicks

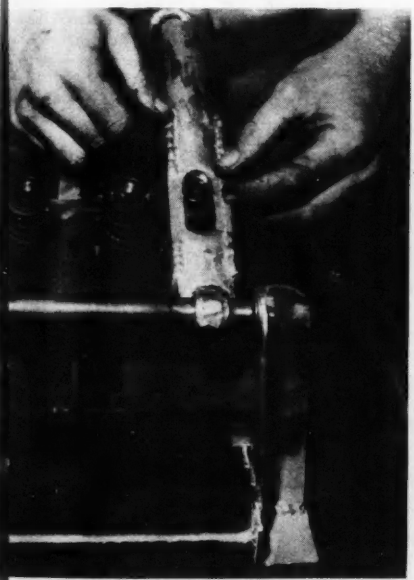
O.H.V. SPRING COMPRESSOR

WITH virtually a complete swing to overhead valve engines by the automotive industry, the need for special jigs to simplify the job of working on these heads has become necessary. If you have ever tried to hold a heavy head assembly such as Oldsmobile or Cadillac on edge with one hand while trying to manipulate a "C" clamp valve spring compressor with the other hand, you will immediately see the advantages of the valve spring compressing jig built by Grant Lambert of Whittier, Calif. A few scrap pieces of angle iron, an old rocker arm shaft and a few odd pieces of rod were about all that was needed to get the job done. The base was made from angle iron with two upright pieces to hold the rocker shaft. Another piece of angle passes the length of the head beneath the valves and short tabs welded to it at the correct intervals keep each valve in a closed position as the spring is compressed. The sliding arm hooked to the rocker shaft has an elongated slot which fits over the valve stem as the spring is compressed and gives plenty of room to get the locks out.

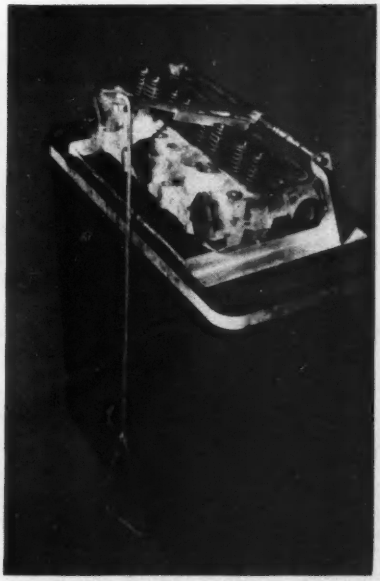
A piece of ⅜ rod has a hook in one end to pass through a hole in the sliding arm and a stirrup on the other end so that the spring can be compressed by foot pressure, with both hands left free to remove the locks. About thirty seconds is needed to remove all of the springs on a head with this jig.



Short tabs are welded to the jig which project up into the combustion chamber and hold the valves closed when the spring is compressed by the foot operated lever arm.



Old rocker arm was brazed to compressing lever which slides on a used rocker shaft. Elongated slot in arm gives plenty of room for removing locks with minimum of effort.

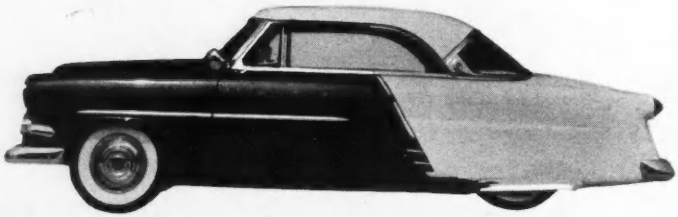


Long piece of 3/8 inch rod has hook turned on one end to fit hole in the sliding arm. Stirrup on the other end requires only a slight foot pressure to compress spring.

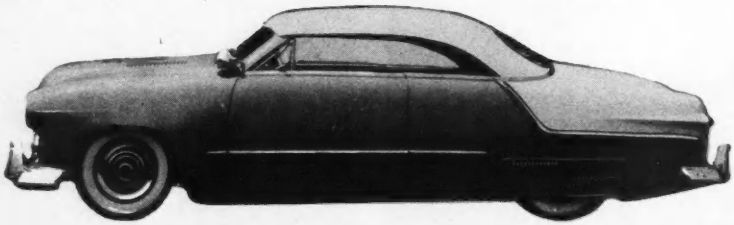
STYLE REPORT:

LATE BUICK and OLDSMOBILE SIDE TRIM GIMMICKS

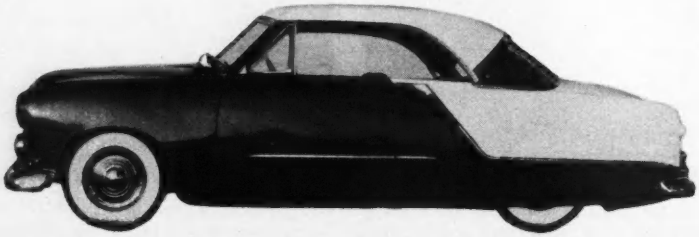
IT'S COMMON knowledge that we backyard Farinas have to depend on what we can scrounge from various Detroit products for our restyling tools. Lately the accent is being put on the very popular—side trim department. Two products that are running a close race for top popularity are the side trims from the late Buicks and Oldsmobiles. Here are seven variations of both, some used strictly for their side trim effect and others providing a smooth separation line for two-tone paint jobs.



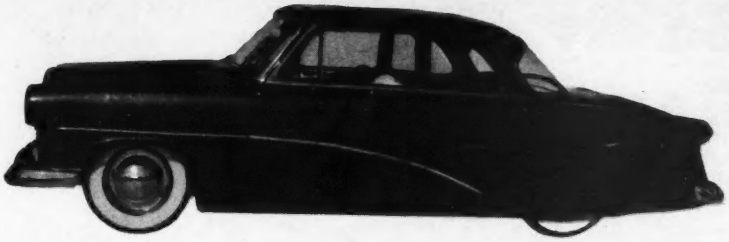
Jerry Carrillo came up with a novel, yet simple design for his '53 Ford. He installed leading section of '53 Olds trim to the rear of the door, diminishing into fender airscoop.



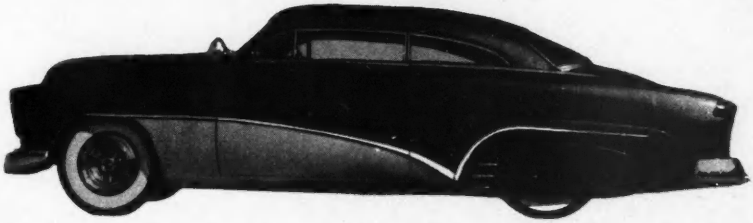
Jay Johnson also employed the '53 Olds side trim, only he utilized the entire component as a unique divider for the two-tone paint. This method is fast becoming very popular.



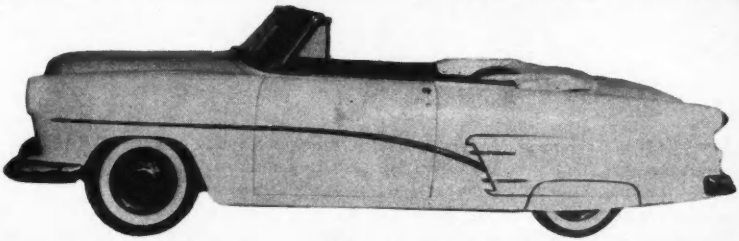
Robbie Martinez's '49 Ford follows the same motif as that of Jay Johnson's, only he used the '54 Olds trim which offers a slightly different contour at the top of the door.



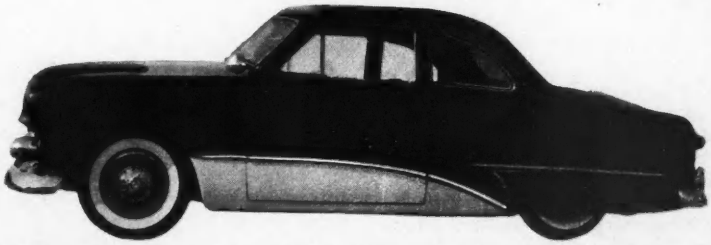
'54 Buick spear-type side trim has been put to popular use, mostly on late Fords. Here Jim Kida has the spear trailing back and disappearing into the rear fender airscoop.



Dave Burgarin utilized all of the '54 Buick side trim for his chopped '49 Merc. The trim separates the two-tone paint and accentuates the novel rear fender skirt airscoop.



Bob Casey's trim installation is very similar to that of Jim Kida's, except Bob routed the Buick trim into the center of the rear airscoop between the Merc grille teeth.



Noel Thomas' '49 Ford possesses another unique airscoop opening in the rear fender skirt. Buick spear has been utilized as a paint color divider as it trails into scoop.

Banty Roadster

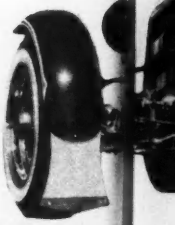
THEY JUST don't come much nicer than Frank Rose's immaculate little street roadster. Frank, who hails from San Leandro, California, admits that *street roadster* is the magic phrase as far as he's concerned and that he and Jack Hageman built the car "just for kicks!"

Frank built up all the running gear, which consists of: chrome-moly steel tube frame, '37 Ford 60 tubular axle with handmade radius rods, '41 Ford spindles and '32 Ford spring perch and spring. The rear end assembly, including the brakes, shocks and transmission, are '41 Ford. The gearbox contains the popular 25-tooth Zephyr gears actuated by a '51 Ford column shift mechanism. A full length '51 Ford F-1 truck steering gear has been installed.

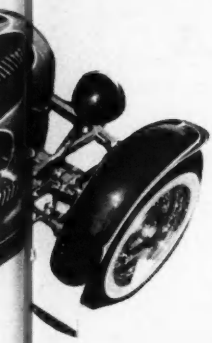
Once Frank had the chassis and running gear complete, Jack Hageman took over and did the honors of restoring the '27 Ford T body. It features: special dash panel, new aluminum firewall, deck lid and a three-piece panel hood. Sharpest of all are the beautifully hand-formed aluminum fenders and the full belly pan.

To finish the car off with a so-called *kiss of the hops,* Frank and Jack agreed on a red and blue scalloped paint job striped in white. This was just what the little roadster needed. Since being completed, and with two years of competitive auto shows under its belt, it has never been out of the winners' circle . . . and it doesn't look as if it ever will!

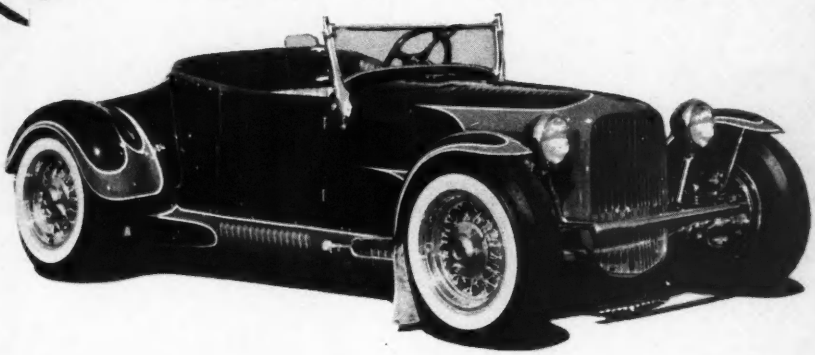
Photos by E. Rickman

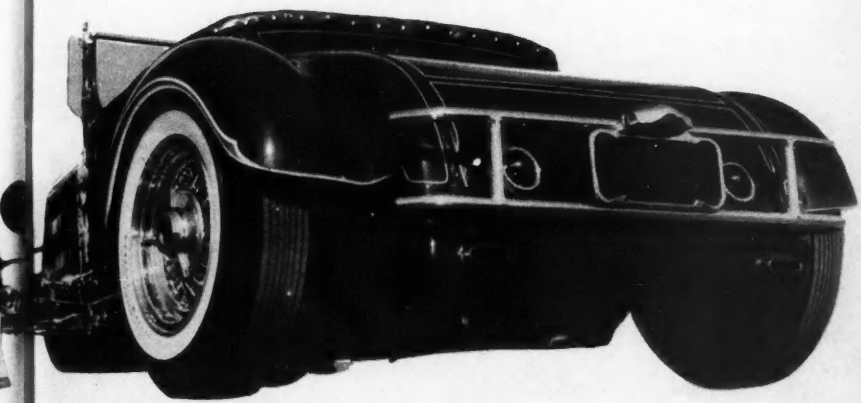


COLORFUL OLDTIMER STEALS THE SCENE



The powerplant in the small bomb consists of a 257-cubic-inch '41 Merc block equipped with a '49 Ford crankshaft and Winfield cam. Weiand heads and manifold make up the exterior engine equipment. Headlights are from a '52 GMC truck and are mounted on accessory brackets. Taillights are '50 Pontiac. The dash panel boasts of a full set of Stewart Warner gauges. The hand-formed fenders and the belly pan are secured to the body with Dzus fasteners. The stock '32 Ford grille was removed from the shell and supplanted with ¼-inch copper tubing. Hall's Upholstery Shop of Oakland, California, is credited with installing the neat two-tone blue, rolled and pleated interior. The complete front suspension system has been chrome-plated; the nerfing bars, both front and rear, are made from Shelby tubing.

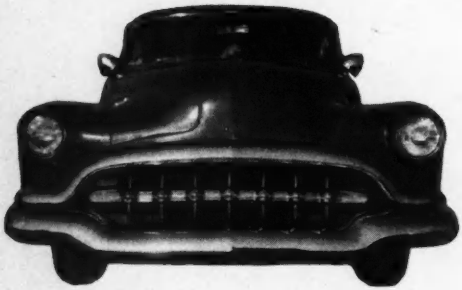




"GRAB BAG"
CUSTOM GRILLE STYLINGS

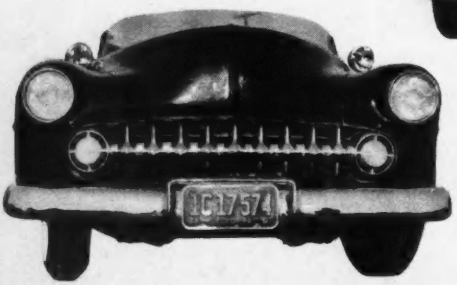
JUST a year ago at this time "Grab Bag" made its initial appearance in CAR CRAFT magazine. Proof of its unanimous acceptance is the many letters we have received questioning certain items that appeared; some suggesting other interesting items for future installments. So all in all it's been highly successful for what it was originally designed for, *a pictorial of miscellaneous cars dealing with a specific theme.*

Being that the first article delt with various customized grilles and now a solid twelve months have passed since that time, what do you say we drop back and do a repeat—Only this time we'll bring you up to date. Here are eleven of the latest—*Happy Anniversary.*



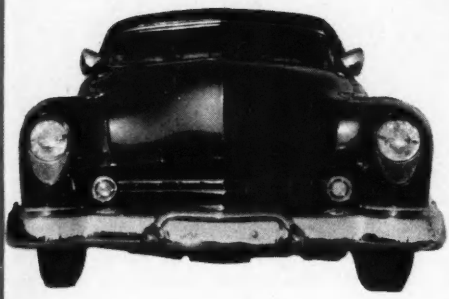
Tommy Ivo used late '53 Chevy components to make up his floating-type grille. The old grille bar braces were retained for supporting the new grille. The parking lights are from a '53 Studebaker.

Dan Helmick came up with a novel treatment. He painted the center upright bars the same color as the car, giving an optical illusion of a floating straight-bar-type grille for his Plymouth convert.



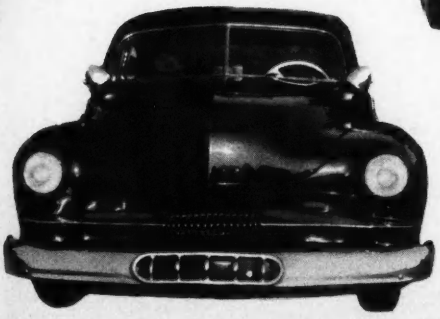
On his '51 Chevy, Mal Ryal reworked the grille opening and installed a complete '53 Chevy grille assembly, adding six additional vertical upright bars to the stock Chevrolet horizontal grille bar.

Emmie Immerso made up this unique grille from tubing and flat steel. To obtain a uniform convex contour, the center upright pieces were formed around a Ford timing gear, complete unit rechromed.



The effective grille on Dave Burgarin's Merc consists of: upper and lower grille bar made from sheet metal stock, '54 Ford parking lights and nine small pieces of 1-inch tubing.

J. F. Kolbeck installed a '52 Mercury grille bar and lower bumper in stock fashion. Fenders required considerable reworking. The top bar moulded into grille shell of the grille is from a '49 Cadillac.



Hank Bisetti used flat sheet metal stock to build this neat floating-type grille for his '49 Merc. Center bar contours the front fenders and inner body panels. Round teeth were made from cold-roll rod.

CONTINUED

Robbie Martinez used clever approach in restyling his '49 Ford grille. An oblong tube frame was molded to the front body panels, then a '53 Chevy grille assembly installed.

If you're looking for a bold front end with lots and lots of chrome, then this may be your answer. Two '53 Merc lower bumpers installed in a top and bottom position.

Ray Moore adapted a '53 Chevy grille shell to his '52 Ford Vic. Center bar is made from '51 Ford components. '53 Chevy grille shells, bars and trim is very popular for restyling.

Jim Kida, like many others, took the late Chevy grille route, too. Tubing was used for rounded corners of the grille opening. Center bar and teeth are from '54 Chevy.

"What's Your

WHA?, PROBLEM?

Dear Chuck:

I follow your technical editorials in CAR CRAFT very closely, and have always found them interesting and informative. I was particularly interested in your discussion of the late model Ford and Mercury OHV engines, which you presented a short while ago. Then, in this February issue, in the "Things to Come" column, when I read that you are preparing a paper on the '55 versions of these engines, I was forced to write you this letter.

I have done a little experimentation on the capabilities—or possibly I should say capacities—of the '54 Mercury engines, and I have, much to my regret, run out of meat. I am not concerned with valves, fuel, nor ignition, for although they are not to be handled identically on every engine, there is a marked analytical similarity in their very nature of operation, and it is that facet of engineering that, regretfully, only makes them "Scream."

Getting down to cases, I cannot believe that 303.736 cu. in. are all that are to be had, and I want to prove it!

If you have ground rod bold heads enough to make a 3 7/16 welded crank clear the cam, it wouldn't be difficult to prove to you that there simply isn't any stroke left. However, I don't believe in long-legged horses anyway. So alright!

But buttoning up a beautiful bomb around these tiny little 3¾ pistons simply chills my whole competitive being! What I want to know is, if you can't bore bigger, why can't you wet-sleeve BIGGER?

Seriously, I would greatly appreciate your opinion on wet-sleeving this engine, and would enjoy hearing from you on the subject.

Sincerely,
W. E. Neill
Atlanta, Georgia

We don't advocate "wet-sleeving" any of the late series overhead Fords as the gasket problem is thereby complicated. Block strength would also be impaired if the cylinder walls were bored clear out. Although the late block structure does not stress the cylinder walls with head bolt locations as the "L" heads did, their stiffness is still an important factor.

You're done on your '54 Merc engine with 303 inches. Any further attempts to bore or wet-sleeve will probably meet with trouble. We think the 3.87 inch bore and 3.3 stroke of the '55 Merc *is the best solution for obtaining more cubic inches. Some '55 Merc shafts have already been stroked .200 to 3.5 inches which in combination with the 3.87 bore gives 331 cubic inches.*

'37 CAD TO CHEVY CONVERSION

Dear Chuck:

The article in the January '55 CCM about "Big Gears for Big Engines" answers *part* of my problem.

I own a '54 Chevy standard shift, my question: Is it possible to make this conversion in my car and also can a rear Chevy mount be made to fit the '37 Cad transmission instead of a Ford mount? If this is possible, what rear ratio can be used with a stock engine and a modified one? Also, could I please have California "Bill's" address?

I enjoy your magazine very much, mostly the Chevy articles.

Jim Martner
Philadelphia 20, Pa.

It is possible to make the conversion and it has been done often. We recommend ratios of either 3.9 or 4.1 with either stock or modified engine. Calif. Bill's address is Fisher Automotive Engineering Co., P.O. Box 41138, Los Angeles 41, Calif.

TWO MORE CYLINDERS

Dear Chuck:

I have a '50 Ford six cylinder in which I would like to install a Ford V8 or Merc '52 engine. Will the weight of the Ford or Merc engine make any difference in the handling? I read somewhere that when in-

Problem?"

By CHUCK EDDY

stalling a V8 in a car formerly powered by an in-line engine, you may find the radiator to have too few water hose connections; and, it is best to use a radiator with the same coolant capacity and number of inlets and outlets as they used in the car for which the engine was originally intended.

Will this apply to either of the two engines and will I have any trouble with the steering linkage or the column?

Yours truly,
E. M. B.
Far Rockaway 91, L.I.

Your '50 chassis should accept the flathead eight very nicely, using standard Ford parts. Look at any '49-'53 V8 Ford and you have nearly all the answers. We suggest you pick up a used V8 radiator and its support brackets to save cooling system trouble.

SHIFTING ROBLEMS

Dear Chuck:

A friend and I are in the process of building a street roadster with a '31 Model A roadster body on a set of '35 Ford rails. It is scheduled for a '48 Merc full house engine and a column shift transmission. Our problem is that this engine has the tendency to "blow" transmissions on the Low to Second shift. An Auburn clutch was installed but it helped very little. We think that the shifting mechanism is at fault and that the mechanism shown on page 41 of the February '55 issue of CAR CRAFT might be our answer. Any suggestions as to the possibilities of this mechanism being our solution would be appreciated.

Sincerely,
Alan Willis
Milford, Nebraska

Although Robert Tisch (January '55, HOT ROD Mag.) has a good answer for part of your trouble (missed shift?) we think that the blame may be placed on poor synchronizer action plus too much clutch disc inertia or drag. Checking the alignment of the transmission with the engine may indicate the source of some plate drag. Is the disc being completely released by the pressure plate when the clutch is depressed? We will do an article on transmission to engine alignment for CCM in the near future.

ADJUSTABLE TAPPETS

Dear Chuck:

I own a '49 Ford in which I have just installed new valves. The problem is, how to adjust the tappets? I have heard about adjustable tappets for Fords so could you give me some information on where to buy them. I certainly would appreciate any advice that you could give me.

Yours truly,
Norman Eisenmann
St. Louis 9, Mo.

Installing adjustable tappets is a very common job and produces the maximum performance out of a given cam. Johnson adjustable tappets for Fords and Mercs should be available at any automotive supply house or speed shop.

REWORKING THE FORDOMATIC

Dear Chuck:

I was very glad when I came across your write-up on the reworked Fordomatic. I have one of these slush pumps behind my hot engine and I'm about sick of the performance. If it can be made to "Go" I would like to keep it.

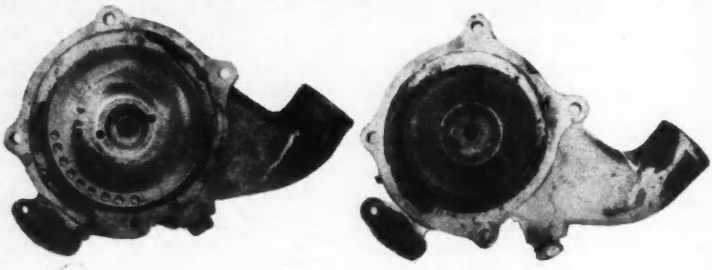
Are these all the parts needed and are they interchangeable with a '52 Fordomatic?

Pressure spring—PAD-77463-A
Valve body—PAE-77700-A
Piston—PAE-77358-A
"O" ring—PAE-77361-A
Piston retainer—PAE-77364-A
Front drum—1P-77502-E
Front band—1P-77370-B

Aaron Wilson
Cleveland, Ohio

The parts you list, Aaron, are all recommended except for this '55 change: B4A 77370-A front band which has two very hard facing inserts at the open ends of the band which will improve its life.

 continued from page 15



The smaller impeller from the '54 water pump at the right may be substituted for the larger '55 pump impeller at left. A decrease in drag of approximately 15% should result.

Panamericana. When asked what his maximum rpm was on the first two days, with an overdrive transmission, he replied *4300 rpm.* This was attained on the downhill sections and was a very safe margin from valve float speed.

We will use *stock* rockers on this and all other engines that we have any hand in. *Light alloy* types, either high-lift or stock ratio *give nothing* on float speed improvement and deflect badly under the necessary and normal valve train loadings at peak rpm. Furthermore, what sense there is in building valve noise into an engine, we cannot see, but these gimmicks do just that! Most insidious is the slight side inclination they give to the pushrod. When under load, the push rod forces the alloy rocker away from the rocker shaft stand causing a noise. If the advertised boost in peak rpm was actually produced by these jigglers, one wouldn't be so unhappy. Rockers can't do the good that light valves accomplish because little of the rocker's weight is reciprocating where *all* of the valve's weight is. At this point, rigidity is far more to be prized than light weight!

MINOR SPEED SECRETS

Looking again for small percentage improvements in output, our glazed eyeballs fell upon the water pump from the '54 V8. Measuring the impeller on the '54 and '55 pumps revealed that they were 12.6 inches and 14.85 inches in circumference, respectively. As the circumference may be considered a rough indicator of power required, the '54 pump should have about 85% of the drag of the '55. Also necessary to change would be the front cover (6059), which forms the pump housing. As the T-Bird employs a different 6059 housing, we suggest instead, to reduce its pump impeller diameter to about 4¼ inches in a lathe. A more sneaky approach to the accessory drag would be the fabrication of a crank pulley of about 5.5 inches in diameter in place of the 6.6 inch pulley on the "272" engine. As the T-Bird employs a vibration damper with a 7.5 inch pulley, this approach would be more difficult. The resulting decrease in accessory speed on the "272" would amount to about a 15% saving.

TUNING TIPS

Some scattered difficulties with "pinging" on acceleration have been experienced with the Power Option 272 and the 8.5:1 C.R. T-Birds. As manually retarding the distributor robs from the whole performance range, another solution is desirable. The spark control valve out of the 1954 *2 throat carb* has proven to be of some help in diminish-

ing this low end ping. Substitute the B5A-9905-A valve for the EAD-99570-A which is specified. Also helpful on acceleration would be the substitution of an EAD-9594-A power jet, marked "31" for the B5A-9594-A which is marked "21."

Not yet settled from the over-all economy standpoint is a revised distributor advance curve, which, however, seems to aid acceleration.

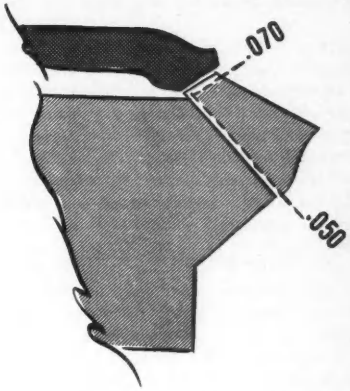
Here are the stock and modified curves:

272 AND 292 ENGINES WITH FOUR-THROAT CARBURETORS

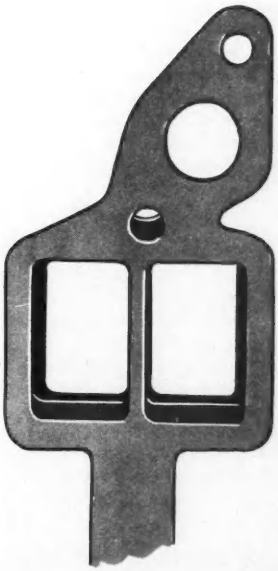
DISTRIBUTOR RPM	VACUUM INCHES MERCURY, STOCK	ADVANCE STOCK
200	0	0°
300	.19	½-1½°
1000	1.36	11-12½°
1400	1.59	12¾-13¾°
2000	1.95	14¼-15½°
	MODIFIED	**MODIFIED**
200	0	0°
300	.19	3°
500	.50	5°
700	.78	7°
1000	1.10	9°
1400	1.36 against stop	12°
2000	1.95 against stop	12°

Note that the suggested curve has more points of reference at the low vacuum range. Also a plate stop has been added to limit the advance plate travel at 12° distributor. This setup would produce an automatic crank advance of 24°, plus the initial timing of 6°, for a total of 30°, instead of the specified 36°-38°. No economy checks have been made with the suggested curve but we suspect some loss might be suffered at cruise conditions, where the *stock* plate slots allowed the plate to advance 16°-16½°. A compromise on the stop setting could be made if pinging *was helped* by restricting plate movement. We hesitate to advocate this procedure wholeheartedly until we try the whole thing for ourselves. If you wish to try this method of tuning, it is important to incorporate only one change at a time and then clock an acceleration to a given speed (60-80 mph).

Have fun building your engine and if you have any suggestions or questions, we'll be glad to hear about them.



The 7 to 5 ratio relationship to be followed when milling the heads is plainly shown here.



1955 Ford, Merc and T-Bird intake manifold gaskets (from bottom to top), showing the difference in intake port sizes of the three.

FORCED AIR HEAT

(*Continued from page 27*)

or lower numerical ratio axle gears will *raise* manifold pressure and lower engine rpm. The reverse, naturally, will lower manifold pressure and let the engine rev higher. This is an old tuning trick but the refinement for competition is to arrange the variables of tire size and gear ratios so that the engine operates *nearest* its determined peak for the *longest* time.

INTERNAL SURGERY ON THE ROOTS TYPE

Much talk has been passed around by the blower fraternity about increasing internal clearances, selecting drive gears, and how fast a Roots can be turned. It is difficult to obtain authoritative information, as the blower manufacturer rates his blowers like Henry does his Fords. But, every hop-up artist in the business violates the specs every day and seems to succeed in getting away with most of it! We listened to one pump maestro tell how he dressed the internal clearances of his early S.C.O.T. Seems the blower was belted to an electric motor and revolved while a liberal quantity of Bon Ami was poured through, suspended in kerosene. Maybe some of the older blowers might withstand this treatment, but unreliable performance would most certainly be the result. The average GMC is a precise assembly and should be treated with considerable respect. If you live near a large city, ask the service manager of a truck fleet where he has his diesel blowers repaired. Let an expert do it!

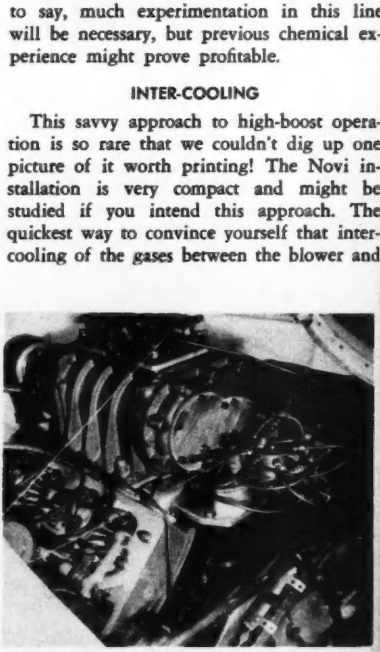
Reports of damage to a blower from overrevving are surprisingly few which leads us to believe that 7000 rpm is comparatively safe, *if not sustained*. It follows, then, that an all-out, super-boost, Bonneville monster of 331 cubic inches could turn 5600 rpm with a blower drive of 1.25:1. Such is actually the case and the blower used was a 4-71 GMC on a Chrysler engine. The output? Near 450 hp!

NO FUEL LIKE AN OLD FUEL!

By the same reasoning that high C.R. engines require high octane fuels and blown engines of the *same output* can be made to utilize lower octane fuels, the blower engine can be made to tolerate the awful-awful drug store concoctions as well as a normally aspirated engine. We know of blown engines operating on 60 inches manifold (15 PSI boost) which use heavily nitrated fuels without suffering the tummy-aches of their unblown brethren. However, for utmost output, some means of controlling combustion chamber temperatures must be used. The simplest method, for use with gasoline, is to use a metering-type water and alcohol injector. This should be of the Thompson Vitameter variety, to accurately measure the demands of the engine and feed the *coolant* to it accordingly. An alcohol-water mixture is normally used in these injectors, but we have often wondered why a nitromethane and alcohol mixture couldn't be used in them for that extra burst! Straight alcohol fuels are often used, with the rich mixture producing the desired internal coolant effect. Needless to say, much experimentation in this line will be necessary, but previous chemical experience might prove profitable.

INTER-COOLING

This savvy approach to high-boost operation is so rare that we couldn't dig up one picture of it worth printing! The Novi installation is very compact and might be studied if you intend this approach. The quickest way to convince yourself that intercooling of the gases between the blower and



Fuel block valve at rear of blower meters fuel to 8 copper tubes which feed fuel into manifold at each of the intake ports.

the engine is a valid approach would be the temperature readings taken in this area. As compression produces considerable gas temperature rise, a highly boosted job may get the mixture hot enough to detonate in the engine. A search of surplus aircraft sources might yield some worthy basic material for an inter-cooler. Unless the cooler can be exposed to an air blast, a mixture-to-water heat exchange will be necessary. This, of course, puts more heat into the engine's cooling system, but it's better there than in the compressed mixture going into the engine. In one case we know of, a small auto-radiator was boxed and placed between blower and engine. The regular engine cooling system was routed through the core of the inter-cooler so that it received the coldest water from the main radiator first.

ENGINE INTERNAL MEDICINE

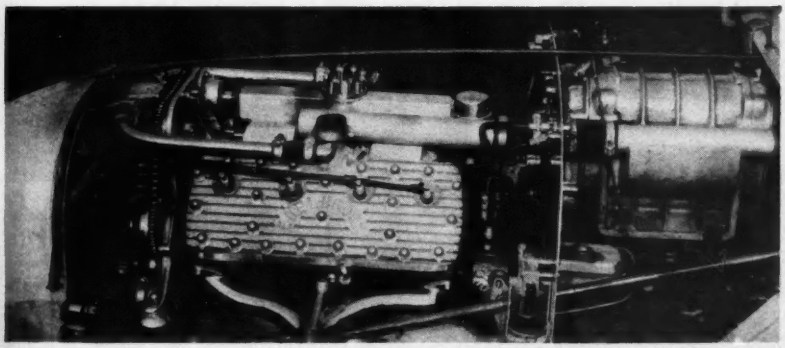
A blown engine tends to be afflicted with ills similar to the nitro engine. Valves, pistons, and sometimes bearings suffer most and suffer worst if *sustained* high outputs are taken from the engine.

Piston heads should be thick and the first ring should be hidden from the hot gases. Valves should be of the best alloys obtainable with sodium cooled exhausts desirable. 1955 Ford F700 and F800 engines employ intake and exhaust valves which would work well on a highly blown job. An ideal blown engine cam requires the wisdom of a master as not many grind enough to have extensive experience. Some use can be made of high durations and overlap if the improved breathing of the blower at *high rpm* is to be best used.

Let's go back and touch upon a few of the sharper points on this high-pressure operation. First, know what pressure induction is and what we are trying to do. Second, measure all the blower characteristics that indicate whether it is putting out its share. Third, select a blower size that when driven from 1:1 to 1.25:1 times crank speed will pump the maximum pressure needed. Fourth, carburate the device so that the engine doesn't starve or fry because of what the blower is enabling *you* to ask of it. Fifth, remember that high-boosts may produce dangerous inlet temperatures. Readings of 260°F or over in the intake manifold should be regarded as dangerous! Sixth, consider inter-cooling as one of the possible solutions. Seventh, if you find a good solution, tell us, as we still don't know enough about supercharging!

BLOWER OPERATING CHARACTERISTICS

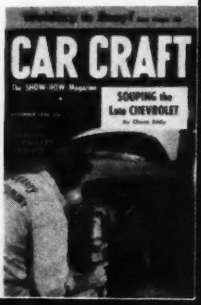
Blower	Engine Size	Drive Ratio	Manifold Pressure	Impeller RPM, Max.
3-71 GMC	up to 300	1:1	55-60"	7000
4-71 GMC	300-331	1:1-1.25:1	55-60"	7000
6-71 GMC	331-350	1:1-1.25:1	50-60"	7000
McCulloch Vs-57	76-300	Variable Max. 1.7:1	38-39"	29,000
Judson	239-280	1:1	60-50"	4000-5000
Other Vane Types	250	1:1	80-50"	4000 Aver.

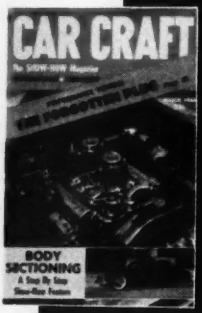


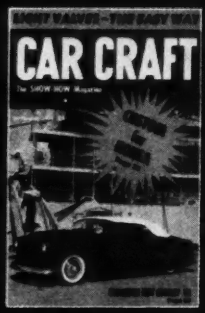
Another example of neat workmanship and ingenuity can be seen in this blown Merc arrangement which has the GMC blower mounted behind the firewall. The roller chain at front of engine drives water pumps, a 2-foot-long blower shaft and the idler pulley.

Restyle Your Car

From the pages of *Car Craft* back issues. Some of the TOP NOTCH CUSTOMIZING ARTICLES from last year's *Car Craft* issues are listed below. Select the issue or issues you need and check the coupon below. Each issue 25c.







JAN.: Channeling A '39 Merc, Building A Floating Grille, Home Made Center Steering.

FEB.: Bolt On Equipment, Truth About Fordomatic, Building Bumper Tip Exhaust.

MAR.: Spark Plug Maintenance, Custom Body Sectioning, Restyling Late Merc Taillights.

APRIL: Souping The '54 Ford, Build Your Own Hot Ignition, Bumper Guard Taillights.

MAY: How To Custmoize The MG, How To Install Spotlights, Home Made Tow Bar.

JUNE: Horses For The New Ford Four, 3 Easy Methods In Front End Lowering, Building Solid Hood Panels.

JULY: Setting Up For Nitro, How To Assemble Quick Change Cogs, Fitting '49-'51 Merc Skirts On Fords.

AUG.: Building A Chevy Dual Manifold, Restyling Side Trim For Customs, Competition Tire Tips.

SEPT.: Light Valves The Easy Way, Building A Nitro Engine, How To Radius Wheel Openings.

OCT.: Porting For Power, Installing The '54 Pontiac Grille Bar, Stepping A Late Chevy Frame.

NOV.: Souping The Late Chevy, Installing '54 Packard Taillights, Welding Is Easy.

DEC.: GMC—For Competition, Building A Modified Stock Car, Rolls And Pleats Made Easy.

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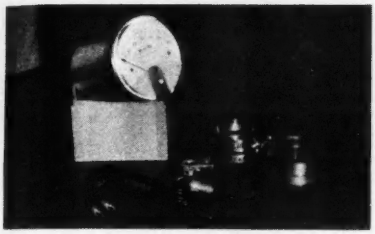
KELTRONIC TACH

continued from page 43



Complete tachometer kit includes double clamp of worm screw type and long wires to connect tach to engine. Small light is extra. Tach can also be mounted flush into dash.

accuracy; built in regulator to eliminate any error due to voltage fluctuation; point gap or plug condition does not affect reading; and the tach will operate on battery ignitions, magnetos or Magsparks.

The various models available take in all cars. They are made for 6 and 12 volt, 0-4000 rpm, 0-6000 rpm, 0-8000 rpm, and for either 4, 6, or 8 cylinders. The 4 cylinder unit is used on 8 cylinder cars using a dual coil ignition system. Standard rpm range is from 0-6000 and all meters are available with either black or white faces. A small service charge is made to convert the tach should it be transferred to an engine with a different number of cylinders. The voltage regulator used in the unit is good for approximately 7200 engine hours or 100,000 miles.

The Keltronic is guaranteed to be accurate within 2% of the full scale and has a positive acting needle with absolutely no fluctuation at high rpm's. It is also completely stable at low rpm's where some tachs with sending units do not give a steady reading.

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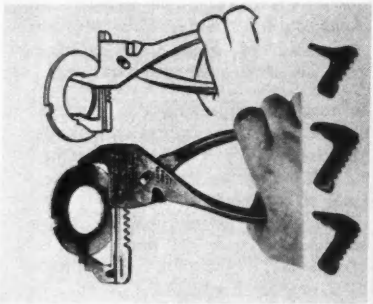
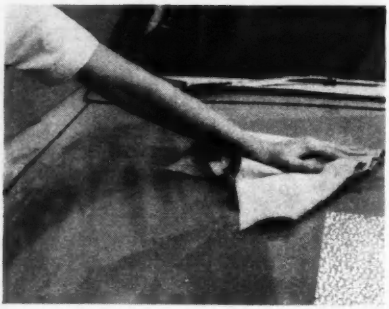
The Plierench Master Kit takes the place of a score of tools, does thousands of jobs quicker and better, reduces the number of tools needed in any tool box or machine shop. All jaws are interchangeable. Each unit of the Kit has been skillfully engineered and precision-built to bring the most powerful gripping and working action ever devised in a hand tool. Write: American Plierench Corporation, 4611 No. Ravenswood Ave., Chicago 40, Ill.





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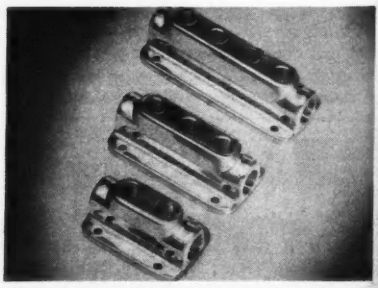

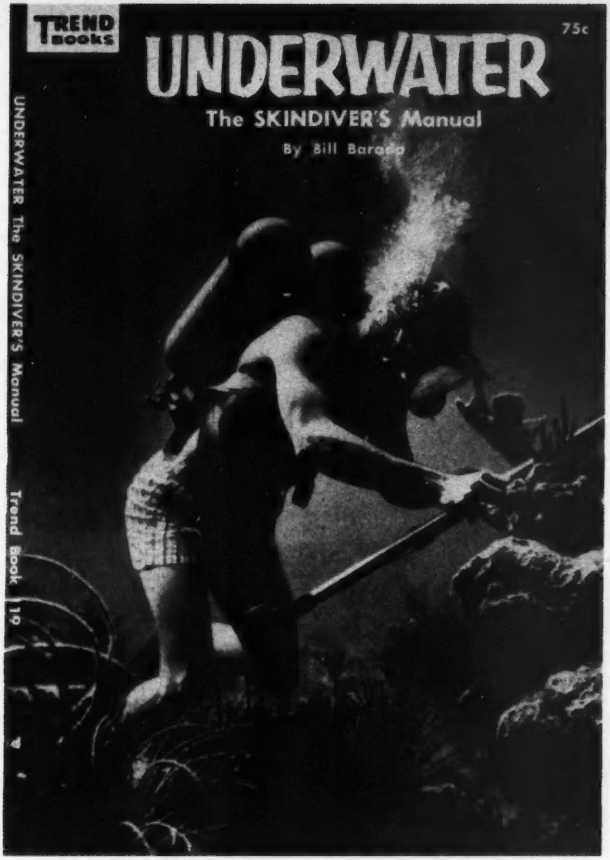

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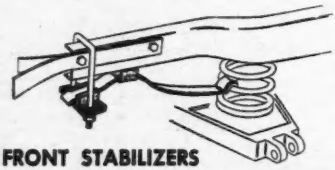

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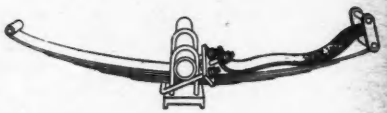

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